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Comeback Kids

**DAVID MILANO AND CREW BROUGHT
THEIR PLANT BACK FROM NOTICE OF
VIOLATION STATUS IN LESS THAN ONE YEAR**

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David Milano
Assistant Superintendent
Cheshire, Conn.



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By Ted J. Rulseh

ON THE COVER: When David Milano became assistant superintendent at the Town of Cheshire (Connecticut) Wastewater Treatment Plant, he found a facility in disrepair. He and his team went to work, and within several months the plant was meeting its permit and a Notice of Violation had been lifted. (Photography by John Marinelli)

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let's be clear

Being Bold

THE FIRST STEP TOWARD MAKING ASPIRATIONS REAL IS COMMITTING TO A COURSE OF ACTION WITH NO THOUGHT THAT FAILURE IS EVEN POSSIBLE

By Ted J. Rulseh, Editor



Among my favorite quotations is one often attributed to Johann Wolfgang von Goethe. It reads in part:

“Until one is committed, there is hesitancy, the chance to draw back, always ineffectiveness. Concerning all acts of initiative and creation, there is one elementary truth, the ignorance of which kills countless ideas and splendid plans: that the moment one definitely commits oneself, then Providence moves too ... Whatever you can do, or dream you can do, begin it.

Boldness has genius, power and magic in it. Begin it now.”

Goethe (1749-1832) was a German poet, playwright, novelist, scientist, statesman, theater director and critic. The words basically mean that if we aspire to accomplish something in our professional or personal life, we need to decide to put our mind, body, heart and soul into making it real. That doesn't mean we'll inevitably succeed. It does mean that the act of commitment opens doors that make success a great deal more likely.

PROOF IN PRACTICE

The truth in Goethe's exhortation was borne out for me when, in my late 30s, I set to work on a book — an anthology of stories about hunting, fishing and the outdoors. At the time I had no credentials, no connections in the outdoor writing community, and no experience as a book publisher or editor.

But once the idea came into my head, I acted upon it without reservation. I created a letterhead, sent letters to dozens of writers, collected manuscripts, bought the rights to publish the stories, found a publisher, secured a contract — all with no thought that I might fail. To me the question wasn't whether the book would come out, but when.

Sure enough, it was published in fall 1993, and it now sits on shelves in numerous libraries and in the bookcases of many lovers of stories about life in the great outdoors.

Goethe's words also might have inspired a longtime friend who, around the time of my book project, started a business selling printers and supplies for large-format displays. Even when sales seemed to have hit a brick wall and his partner gave up and quit, he persisted. Thanks to his commitment, the business turned the corner and became a big success.

Over the years, Goethe's words have helped me in various pursuits, many successful, some not. But even where I failed I had the satisfaction of knowing I had made the commitment — that to borrow a phrase from sports, I had left it all out on the field.

There's a world of difference between moving toward a goal in fits and starts, always haunted by uncertainty, and pursuing it wholeheartedly, knowing you'll get there.



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WHAT'S YOUR ASPIRATION?

Is there some cherished goal you aspire to? Maybe it's a top-level professional certification. Or a career move into a certain level of leadership in the water industry. Perhaps it's a dream to make a home in a community or a landscape you love dearly. A sideline venture that you hope to turn into a full-time occupation when you retire. Even just a home improvement project you've been pondering, like that lower-level, best-in-town home theater.

Whatever it might be, there's a world of difference between moving toward a goal in fits and starts, always haunted by uncertainty, and pursuing it wholeheartedly, knowing you'll get there (even though the chance exists that you will not).

Goethe wasn't the first and isn't the only sage to expound on the power of positive thinking. Norman Vincent Peale wrote a book with that title. *The Little Engine that Could* teaches the lesson to little children. Walter D. Wintle observed, "Success begins with a fellow's will, it's all in the state of mind." Colin Powell said, "Perpetual optimism is a force multiplier."

But I prefer Goethe, because I like his idea that providence favors the bold — that complete commitment to a goal causes cosmic gears to click into place, giving rise to turns of good fortune that otherwise would never occur. It has proven true often in my life. I hope you'll find it proves true in yours.

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WATER SYSTEM CYBERSECURITY

The EPA Is Cracking Down

An EPA survey revealed that over 70% of U.S. water systems have critical cybersecurity vulnerabilities. That's why the agency has issued an enforcement alert highlighting these threats and urging community water systems to conduct regular risk assessments and develop Emergency Response Plans.
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OVERHEARD ONLINE

“When you start thinking about the city and its needs, it’s amazing how you can find ways to benefit the people who live here.”

New Jersey Wastewater Utility Puts Community First
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GREENER TREATMENT Economic and Environmental Advantages



Researchers at Colorado State University recently conducted a study demonstrating the potential benefits of transitioning to green wastewater treatment methods in the United States. The study indicates that embracing carbon-financed green infrastructure could lead to cost savings and emissions reductions.
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PUBLIC OUTREACH

Parody Song Offers Conservation Tips

Denver Water recently released a creative Backstreet Boys parody video to spread awareness about responsible water use during the summer months. It's a great example of how utilities can leverage the power of pop culture to bridge the gap with the communities they serve.
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SVI₅ comparison of aerobic granular sludge (left) and conventional activated sludge (right)

Not a Jet Fighter

JOINING THE U.S. AIR FORCE LED MARK HIERHOLZER TO THE CLEAN-WATER INDUSTRY. IT HAS TURNED OUT TO BE A HATFIELD-AWARD-WINNING CAREER.

STORY: **James Careless**
PHOTOGRAPHY: **Jay Pickthorn**

When Mark Hierholzer joined the United States Air Force he had no thought of becoming a wastewater operator. “In 1984, I started college and I didn’t really know what I wanted,” he recalls. “I was going to burn up some money if I couldn’t sort out what degree I wanted. So I thought, ‘I’ll go ahead and join the Air Force. Maybe they can help me make up my mind or postpone the decision.’”

As it turned out, the Air Force put Hierholzer on a career path that had nothing to do with flying, but it all worked out for the best: Today, he is operations manager for the Sioux Falls (South Dakota) Water Reclamation Facility.

Last year he received the William D. Hatfield Award from the South Dakota Water Environment Association. “I knew I was being put in for a longevity award, but this award was the first one they read that night,” says Hierholzer. “My name got mentioned and my heart stopped. I was completely surprised and emotionally moved, in a very good way.”

EARLY DAYS

Hierholzer was born in Oxnard, California, in 1964. His father Frederick Hierholzer was involved in the aerospace business, and “worked on a lot of top-secret stuff,” he recalls.

“My dad would go out on the ship that tracked ballistic missiles launched from Vandenberg Air Force Base and make sure the trajectory and where the warhead landed was on point in the South Pacific.” The family lived at the base until Hierholzer was five years old, at which point they moved to Lompoc, California, just east of Vandenberg.

Hierholzer attended Lompoc Senior High School and spent his spare time with his buddies at the beach. “One of my buddies had a dune buggy, and we would take off and go ride that to the sand dunes whenever we had



Mark Hierholzer,
wastewater operations
manager, Sioux Falls
Water Reclamation
Facility

Hierholzer (left) with Sam Slaby, lead wastewater operator.



a chance,” he says. “I was a typical Southern California high school student, just going through school and not sure what I was going to do.”

It was after he left Alan Hancock College in Santa Maria, California, and joined the Air Force that he encountered wastewater treatment. “Usually when you think about

the Air Force, you think jet bombers,” he says. “But they also have a public works department called a Civil Engineering Squadron, and it does the same thing that public works does for municipalities.

“They have to maintain the streets, the electrical systems, the water systems, utility systems, everything. When I went to the processing center, they looked at my school transcripts, and said, ‘Oh, you like chemistry and physics and science. Do you want to work inside or outside?’

He replied: A little bit of both. “Their computer analyzed my answers and then put me in a career field called environmental technician with a job description that basically said something about helping ensure that Air Force installations comply with water and environmental regulations through potable and nonpotable water treatment processes.”

“Usually when you think about the Air Force, you think jet bombers. But they also have a public works department called a Civil Engineering Squadron.”

MARK HIERHOLZER

TO CIVILIAN LIFE

With his assignment Hierholzer attended an Air Force technical school with courses designed by Texas A&M University: “It was a really good school that went into water and wastewater treatment.” After graduating, he was first assigned to water and wastewater treatment at Blytheville Air Force Base in Arkansas, followed by a stint in the Azores Islands.

“I was a sergeant at that time, and I was responsible for replacing all the old wells,” he recalls. “We got to the point where we could replace a 200-foot well in one day.” He then ended up at Tyndall Air Force Base in Florida, first as a staff sergeant, crew leader and superintendent of the water/wastewater systems during Desert Storm.

“And then in 1992, the Air Force decided that the environmental compliance regulations were getting too much for the military to handle, so they

Mark Hierholzer, Sioux Falls (South Dakota) Water Reclamation Facility

POSITION:
Operations manager

EXPERIENCE:
40 years

EDUCATION:
Associate degree, applied science – ecological controls, Community College of the Air Force

CERTIFICATIONS:
California Grade 5 Wastewater Operator, South Dakota Class 4 Wastewater Operator

GOAL:
Enjoy the next stage of life

outsourced it to the civilian communities and my job pretty much went away,” Hierholzer says.

That led to a civilian job at the West Sacramento Wastewater treatment plant as a senior wastewater operator. “It was a conventional activated sludge plant, and we reconfigured it to a biological nutrient removal process, one of the first in California.”

Then it was on to the University of California, Davis, as lead wastewater operator of the campus oxidation ditch plant, followed by a stint in the private sector at the university’s Hydro Science Membrane Bioreactor Plant as operations supervisor.

Hierholzer later became chief plant operator and then superintendent at the city of Woodland (California) Water Pollution Control Facility. He left California in 2010 to join the Sioux Falls Water Reclamation Facility.

BIG CHANGES

Hierholzer started there as operations supervisor and then moved up to operations manager at the city’s 1980s vintage plant, which started at 13 mgd design flow and was expanded to 21 mgd.

The headworks is equipped with three 13.5 mgd rotary drum bar screens (HUBER Technology), four circular primary settling tanks with Penn Valley double-disc sludge pumps, and two gravity thickeners, also with Penn Valley double-disc pumps. Four 830,000-gallon anaerobic digesters use Hayward Gordon pumps for mixing and Alfa Laval spiral heat exchangers for temperature control.

The plant operates two 800 kW total capacity Caterpillar engine-generators for cogeneration fueled with biogas. The gas is pumped into a storage sphere by way of a compressor (Unison) with of 450,000-cubic-feet-per-day capacity. The generators deliver about 12,300 kWh per day.

“Primary effluent goes through four first-stage trickling filters and then first-stage intermediate clarifiers,” says Hierholzer. “It then continues to four second-stage trickling filters and on to the second-stage intermediate clarifiers.”



Mark Hierholzer’s military career led him into civilian work in the clean-water industry.

OVERCOMING TRAGEDY

Away from work, Mark Hierholzer has not had an easy life. “I was married to Gail and we had two boys, Micah and Noah,” he says. “I lost my wife and Noah due to bipolar disorder. I lost my wife in 2014 through suicide, and then my son through suicide in 2020.”

The impact of such a dual tragedy is hard to imagine, yet Hierholzer managed to keep going. “I’ll tell you what: It’s faith in God that gets you through those things,” he says. “I would not be able to get off the ground if I didn’t have my faith.”

Today, Hierholzer gives back: “I’m very involved with my church. I teach religious education to seventh and eighth graders. I’ve also gone overseas to Europe on two trips; Italy on one and Spain, France, and Portugal on the other.

“I like to travel. I like physical fitness. I like to go jogging and ride my bike and hike on trails. And I spend time with my son Micah as much as I can.”

“The flow is next pumped into six aeration basins with coarse-bubble diffusers. These basins are being expanded to a total of nine, with fine-bubble diffusers (Sanitaire, a Xylem brand). The air is provided by four 800 hp centrifugal blowers, which will be replaced by seven Aerzen AT-400 turbo blowers of about 400 hp each.”

ACCORDING TO PLAN

The blower replacement is part of a plant expansion and overhaul that began in 2022, and that Hierholzer is leading. “Around 2014-15, I noticed that we were hitting capacity limits and that we were starting to roll through all the reserve capacities we had,” he says.

“So we did a master plan: It took us about a year and a half to do growth projections in Sioux Falls for the next 20 to 30 years. In 2018 we went out for bid on a contract

The Sioux Falls team also includes, from left, Matt Voltz, equipment operator; Phil Greenwood, biosolids supervisor; Shelly Trigg, administrative assistant; Mark Hierholzer; Darren Stotesbery, wastewater operator; and Sam Slaby, lead wastewater operator.



Team members in Sioux Falls include, from left, Joe Mantis, sewer collections technician; Mark Hierholzer, wastewater operations manager; and Micah Hierholzer, sewer collections technician.



to expand the plant. We worked out the details and broke ground in 2022 with a completion date of 2025.

“We found that we needed 30 mgd and about 66,000 pounds of BOD treatment per day to make this plant serviceable to about 2035 to 2040,” Hierholzer says. “We are also expanding from four to eight final clarifiers served by cross collectors (WesTech Engineering).”

The final clarifier effluent flows to eight anthracite filters. Disinfection is provided by 12.5% sodium hypochlorite; dechlorination is with sodium bisulfite. The chemical storage building will be fully upgraded in 2024-25 to house five 5,000-gallon sodium hypochlorite storage tanks and two 5,000-gallon sodium bisulfite tanks.

Finally, the chlorine contact chamber is being expanded with two additional channels on each side of the contact chamber, to comply with the state standards for the capacity expansion.

“Everyone here has really integrated well with each other. There’s no ego on this team.”

MARK HIERHOLZER

THE LAST HURRAH

Hierholzer credits the success of the project, and the facility in general, to the quality of his 69-member team. Key players include: Mark Hierholzer credits the success of the project, and the facility in general, to the quality of his employees:

- Biosolids team members Phil Greenwood, supervisor; equipment operators Bryan Runge (lead) and Matt Voltz
- Lead wastewater operators Jesse Groen, Robert Baker, Sam Slaby and Eric Watson
- Wastewater operators Tyler McCallum, Zach Nase, Roxie Kierst, Miranda Stefanich, Jordan Bosch, Conner Mesman and Darren Stotesbery

“These guys are miracle workers,” Hierholzer says. “We’ve gone through blizzards, ice storms, floods, high-flow events and capital projects, and everyone here has really integrated well with each other. There’s no ego on this team. If someone feels that somebody’s better at a job than they are, they will just ask them for help, and they’ll get it.”

The upgrade to the Sioux Falls facility will be the last major achievement of Hierholzer’s clean-water career: “I’ve been in this business for some 40 years,” he says. “I plan to retire in June (2024), take the summer off and relax.” It’s a fitting conclusion to a career entirely unexpected, but nonetheless rewarding. **tpo**

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Patricio Pacheco, water resources and conservation specialist, holds up the lid of the coagulation basin as he uses an EnviroScape model to show how coagulation helps with the treatment process.

“A lot of people are already doing the simple things. How do we push that needle even further?”

CHRISTINE CHAVEZ

Conservation: The Next Level

WHAT HAPPENS WHEN THE BASIC MEASURES SHOW DIMINISHING RETURNS? SANTA FE LOOKS TO YOUTH EDUCATION AND PUBLIC INVOLVEMENT TO ENCOURAGE WATER-SAVING BEHAVIORS.

By Steve Lund

Santa Fe had substantial success cutting per-capita water consumption. Now the New Mexico capital city is focusing on a long-term conservation strategy built on youth education and public involvement in decision-making.

“A lot of research now shows that it’s the money and time we put in with our younger kids that will save the most water in a lifetime,” says Christine Chavez, water conservation manager. “If you try to teach an adult something different, first of all you have to break a habit that they’ve established for 30 to 40 years.

“Then they have to take on a new behavior. And for the rest of their lifetime, they’re going to save X amount of water. But if you change a 7-year-old’s behavior, we have so many more years of savings to consider. So where do we get the bigger bang for the buck, long term? We’re really looking at our youth to help us get there.”

HITTING A PLATEAU

Chavez received the 2023 Water Star Award from the Alliance for Water Efficiency for making Santa Fe’s conservation programs a model for the Southwest. She notes that the city is fortunate to have multiple sources — Colorado River water, two well fields and two reservoirs — and a reuse project in development.

“And then we also consider conservation to be a source of water,” says Chavez. “The more water we conserve, the more that water can be used to support other things, like new residents who move here, or new industries and commercial uses.”

Santa Fe has been working on conservation for a long time. From 1995 to 2020, consumption has declined even though the population has grown. Per capita consumption in that period dropped 45%, from 168 gpd to 93 gpd.

But Chavez, who joined Santa Fe in 2017, finds it harder to make gains these days. The city has used incentives like bill credits for water-saving appliances; technical tools like the EyeOnWater web portal and smartphone app, which give customers data on water use and alerts them to possible leaks; and promotion of irrigation best practices for landscapes and gardens.

“Before we could just see water use declining,” she says. “Now we’re really getting down to demand hardening. A lot of people are already doing those simple things. How do we push that needle even further? And our managers now are asking: How much money are we spending per gallon of water saved?”

CREATING PARTNERSHIPS

In previous positions, Chavez felt like a lone warrior for conservation, but since she came to Santa Fe she has focused on developing partners to help spread the message.

“I feel like the most essential part of this work is to form partnerships,” she says. “I can’t go out to all the schools. But if I partner with a group that’s already providing environmental education in schools, then I’m helping them do their job, and they’re tailoring their message to get the key points of our program across.”

She has built partnerships with educators, with Santa Fe Community College, and with the chamber of commerce. “It never works for me to go to a business and say, ‘We’d like to audit your water use and give some recommendations.’ But if a chamber of commerce approaches that business and touts the benefits of saving water and saving money, that really helps us.”

Chavez has worked with the community college on a program to train water use auditors. “This is a multi-layered program,” she says. “We’re building a workforce through the community college. We’ve built our own certification program. We have trained professionals doing audits of businesses



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U.S. Patent 11,598,696 & 11,768,132

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Volunteer Craig O'Hare portrays the Water Wizard and Patricio Pacheco talks to students at the Water Fiesta, an annual event for fourth graders.

on our behalf. And that's where the chamber comes in, too. They're helping us promote this program, and they schedule the audits."

PUBLIC INVOLVEMENT

The most important partnership is with the public. "We have a five-year scorecard," Chavez says, "And then we create an annual scorecard based off that with the help of a citizen-based Water Conservation Committee. They help us write that, and then we report our progress to the public on our website every six months. Then, with public input, we develop the new scorecard for the upcoming year."

Chavez observes based on her work with the committee that the public is very concerned about water quality and water scarcity. "One big reason for our success is that we continue to involve the public in our efforts and in the way we communicate what we've done, what we're going to do, and what they would like to see us do."

Santa Fe still gets a significant number of applications for installing water-saving appliances, but Chavez is also looking for high-impact projects. "We're piloting a program now to go into low-income apartment complexes and doing a complete retrofit of all their toilets, shower heads and aerators," Chavez says.

Projects like that help the residents by reducing their utility bills while conserving a lot of water: "In one of those projects, we're replacing 300 toilets as opposed to the single application to replace just one."

Over the years, Santa Fe has developed a culture of water conservation. Chavez tries to foster that with continuous public involvement and education. "As far as education we're trying to establish the value of water, so that kids and teenagers and even their parents and families understand it is a limited resource," she says.

The partnerships also help: "We've got great public support. I can turn to any of my partners now and they're marketing our programs on their websites and to their email lists. It's just like layers and layers and layers of communication." **tpo**

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Going High Tech

A NEW WATER PLANT WITH AN INTEGRATED MEMBRANE PROCESS USING ULTRAFILTRATION AND REVERSE OSMOSIS BOLSTERS SUPPLY AND RELIABILITY IN COUNCIL BLUFFS, IOWA

STORY: **Ted J. Rulseh** | PHOTOGRAPHY: **Scott Dobry**



The team at the Council Point Water Treatment Plant includes, from left, Rod Scott, purification coordinator; Brian Cady, general manager and CEO; Ian Cassidy, lab technician; and Tim Parker, purification manager.

A dozen years ago, the Iowa city of Council Bluffs needed more water treatment capacity to accommodate industrial and commercial growth.

Instead of expanding its 20 mgd conventional treatment plant or building a similar new plant in another location, the Council Bluffs Water Works chose a membrane treatment technology using ultrafiltration and reverse osmosis.

The result is the newly expanded 10 mgd Council Point Water Treatment Plant on the city's southern edge. It includes such a high level of automation that staff members can monitor and operate it remotely from the Narrows Water Treatment Plant. Operators visit the newer facility for just a few hours each day to run laboratory tests, top off chemical feeds and perform routine checks of the equipment and process.

"We're very happy with that water plant," says Brian Cady, water works CEO and general manager. "It has performed very consistently, and it is easy for the operators to understand." The facility received a pair of 2023 awards: the Grand Award for Engineering Excellence from the American Council of Engineering Companies of Iowa, and a National Recognition Award from the American Council of Engineering Companies.

MEETING DEMAND

The Council Bluffs Water Works serves its home city of 62,000 and delivers water wholesale to a rural utility and the city of Crescent (population 650). The utility draws source water from the Missouri River and the Missouri River Alluvium, a major sand aquifer.

In the early 2010s the utility faced growth in demand that it could not meet with the 1952 Council Bluffs Nar-



“It was a steep learning curve, but it really just became part of the routine, like any other change that happens.”

TIM PARKER

Rod Scott (left) and Tim Parker check the setpoint to start disinfectant generation on the plant's Microclor hypochlorite generator (Cleanwater1).

rows plant, which treats mainly river water with coagulation, sedimentation and lime softening. At the same time, the distribution system could not handle growth in the southern part of the service area.

Engineering studies showed that the most cost-effective solution was to tap the aquifer with a new wellfield and build a new 5 mgd treatment plant. The water works team, the HDR engineering firm and the former GE Water and Process Technologies (since absorbed by Veolia Water Technologies and Solutions) worked together to strengthen the water system and to design and build the Council Point plant.

The building was constructed to enable easy expansion to 10 mgd. That project was completed in 2022, and the plant now produces about 3.7 mgd on average. (The two water plants combined produce about 11 mgd.) The Council Point plant site and wellfield can accommodate further expansion to 20 mgd.

A key challenge in design of the plant was the quality of the groundwater, which is high in iron (up to 7 mg/L), manganese (up to 1 mg/L) and hardness (about 300 mg/L). Today the plant provides a second water source for the community and improves water supply redundancy and reliability. It also helps cut transmission main costs for servicing the city's growth areas.

DUAL MEMBRANES

The GE Water technology was chosen after a pilot test against a competing vendor's system. Membrane treatment isn't new to the industry, but the process at Council Point is unique in using low-pressure and high-pressure membranes in sequence.

Well water first passes through a strainer (Eaton Filtration) and then through draft aerators (Siemens, now Evoqua Water Technologies) where iron is oxidized and sodium permanganate is added to oxidize manganese. The low-pressure ZeeWeed UF membrane system (Veolia) with five treatment trains and 1,600 total modules removes the oxidized iron and manganese particles. Waste from this system is sent to a plate settler (Parkson Corporation). Most treated water is then returned to the head of the plant.

A portion of the UF filtrate is delivered to six RO membrane trains



Ian Cassidy takes a sample at the influent to the RO membranes (Veolia) to confirm there is no chlorine residual.

“The automation controls multiple functions, and we monitor to make sure all the parameters look right.”

BRIAN CADY

with 1,296 modules (also Veolia) to remove hardness and dissolved solids. The resulting reject water is discharged to the Missouri River. The RO permeate water is blended with UF filtrate to achieve the desired hardness in the finished water. The water is then treated with sodium hydroxide to adjust the pH to 7.5, dosed with fluoride, and disinfected with sodium hypochlorite produced on site (Cleanwater1).

Some mixing of water from the two plants occurs inside the interconnected distribution network and in the water towers and reservoirs that comprise 9 million gallons of system storage. An iFIX SCADA system (GE Digital) provides monitoring and control of the distribution system pumps, tanks and both treatment plants from the Narrows facility.

MAKING IT WORK

Membrane technology was new to the Council Bluffs operation and maintenance staff, most of whom had more than 10 years of experience when the new plant's first phase was built. Tim Parker, purification manager, who has been with Council Bluffs since 2004, says extensive and timely training helped prepare the team.



Brian Cady, general manager and CEO, Council Bluffs Water Works

Council Point Water Treatment Plant

Council Bluffs, Iowa

cbwaterworks.com

BUILT:
2013, expanded 2022

POPULATION SERVED:
90,000

SERVICE AREA:
City of Council Bluffs plus
wholesale to city of Crescent
and a rural utility

SOURCE WATER:
Missouri River (primary) and
Missouri River Alluvium

FLOWS:
10 mgd design, 3.7 mgd average

TREATMENT PROCESS:
Integrated membrane
(ultrafiltration and reverse
osmosis)

SYSTEM STORAGE:
9 million gallons

EMPLOYEES:
45 (entire utility)

ANNUAL BUDGET:
\$15 million (operations,
entire utility)

Staff members in addition to Cady and Parker include Rodney Scott, purification coordinator; Ian Cassidy, lab technician; plant operators Chase Reed, Dean Redinbaugh, Joshua Hannan, Chris Anderson and Noah Gilliam; Robert Sekera, maintenance manager; Tate Brandon, maintenance coordinator; Cody Neighbors, equipment mechanic; and Shane Ruckman, facilities and grounds foreman.

“There was a lot of training involved because it was a totally different process,” Parker says. “The engineers set up a training program where all the operators went through the facility and gained an understanding of how each process worked.” That included training in the clean-in-place procedures for the UF and RO membrane modules.

“GE Water sent a trainer who worked with us for about a week and really got into the nuts and bolts of everything,” says Parker. “Once we were all trained up, we had to change our staffing around. We had to add a relief operator to make everything work.”

The Narrows plant is staffed around the clock, seven days per week; operators work 12-hour shifts on variable days of the week. The additional staff-

KEEPING THE WATER FLOWING

The Council Point Water Treatment Plant ran with few and brief interruptions while its capacity was doubled to 10 mgd starting in 2018 and ending in 2022.

Making that happen came down to careful planning between the Council Bluffs Water Works staff and the contractor, Building Crafts of Red Oak, Iowa. “During the upgrade, the plant was performing pretty much the whole time,” says Brian Cady, CEO and general manager. “There were a few shutdowns that we had to do, but they lasted eight hours at the maximum.”

Tim Parker, purification manager, observes, “For us as operators, it was challenging every day. You can imagine going to the plant and having construction work going while we were trying to get things done. But the contractor understood that we needed to keep that plant running.

“We had meetings with them every morning to discuss what was going on that day. They were very cautious in how they worked around our operations, and that made it easier for us to operate that plant. We also dictated somewhat when the shutdowns could occur. For example, we didn’t want to have to shut down in the middle of July. So we worked with the contractor on scheduling the shutdowns. In turn they tried to get as much work done as possible during each shutdown and to minimize the number of shutdowns.”

For the most part the shutdowns were required as part of tying the new capacity in with the existing 5 mgd integrated membrane process. “There were some common headers for chemical feeds, RO and UF permeate, and well water,” says Cady. “It was necessary to shut everything down to tie onto those common headers.

Cady believes that keeping the plant online through the construction process was a reason behind the two engineering awards the project received.

ing freed operators to make their daily visits to the Council Point plant. Cross-training ensures that all six operators are familiar with both plants.

On any given day, the Narrows plant is staffed by one operator on each 12-hour shift and a relief operator who works from 7 a.m. to 3 p.m. It’s usually the relief operator who makes the daily visits to Council Point.

HIGHLY AUTOMATED

Staff members monitor the membrane plant from the Narrows facility around the clock by way of the SCADA system. “It helps there’s a lot of computer programming in the membrane plant,” Cady says.

As water goes through the plant it is tracked by level indicators, flowmeters and other instrumentation. Well output ramps up or down automatically to meet demand or to accommodate backwash cycles. “The automation controls multiple functions, and we monitor to make sure all the parameters look right,” Cady says.

Parker adds, “The SCADA system shows the layout of the whole plant so we can easily monitor everything — the flows, the transmembrane pressures for the UF and RO. We can remotely adjust the blend and change the hardness.

“We get alarms if something is not right with the membranes. The chemical feeds are trended so we can monitor to make sure the chemicals are feeding as they should. We monitor the pH, the turbidities, and conductivity going into and out of the RO.” Finished water typically measures about 0.04 NTU turbidity and 160 mg/L hardness.

SMOOTH TRANSITION

Cady and Parker agree that the operations and maintenance teams adapted well to the new facility, despite the major change in treatment technology.



Rod Scott checks inventory levels, inspecting chemical feeders in the bulk container room, equipped with Pulsafeeder pumps.

“We’re very happy with that water plant. It has performed very consistently, and it is easy for the operators to understand.”

BRIAN CADY



Ian Cassidy cleans an aerator screen to remove debris and maintain proper airflow atop the pretreatment building (Siemens, now Evoqua Water Technologies).

“It wasn’t that difficult, really,” says Parker. “It was a steep learning curve, but it really just became part of the routine, like any other change that happens.”

All in all, the membrane plant has been a rewarding experience for the Council Bluffs Water Works team and a solid investment for the future of Council Bluffs. **tpo**

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The Essex Junction Wastewater Treatment Facility has a 150 kW array of solar panels.

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THE ESSEX JUNCTION WASTEWATER TREATMENT PLANT TAKES ON MULTIPLE ENERGY-SAVING INITIATIVES WHILE DEPLOYING INNOVATIVE NUTRIENT REDUCTION AND HARVESTING TECHNOLOGIES

By Steve Lund

If there's a technique for saving or making power at a wastewater treatment plant, chances are good that it has been adopted or at least tried in Essex Junction.

That's one reason the city's wastewater treatment facility received a 2021 Energy Leadership Award from Efficiency Vermont, an organization that helps state residents and businesses save energy.

The treatment plant has a 150 kW solar array on site, harvests methane from its anaerobic digesters, and burns it in a 150 kW electric generator (2G). Solar energy and cogeneration fulfill about 58% of the facility's power demand. Numerous smaller projects include:

- Geothermal well at the administration and headworks building
- Solar walls on the administration and dewatering buildings
- Pumps throughout the plant right-sized and replaced them with more efficient, lower-horsepower pumps (Hayward Gordon)
- Variable-flow drives (Eaton) were added to motors
- Manually operated butterfly valves for aeration control changed to actuator valves (REXA) regulated by the SCADA system
- Heat pump connected to the final effluent to heat and cool a chemical storage building

These projects, part of an \$15.3 million upgrade, have helped the plant reduce overall power consumption even while adding processes for nutrient reduction.

Chelsea Mandigo, water quality superintendent, says efforts to reduce power consumption continue and believes the plant now generates more than 58% of its power on site: "That was a 2018 number. I'd like to say we've moved the needle by a couple percent since then."

PEAK POWER CONTROL

The latest power-saving project is taking part in a Green Mountain Power program to reduce demand from high users during peak windows — times when grid-wide demand is expected to be high. The treatment facility can temporarily shut down certain processes during peak windows in return for incentives from the utility.

The plant usually receives a day's notice to curtail demand; the shutdown strategy is programmed into the SCADA system and can be modified as needed. Essex Junction was the first treatment facility in the state to take part; it has gone well enough so that other plants are considering participation.



An anoxic zone for biological phosphorus removal was added to the treatment stream. It uses low-power mixers (INVENT) to keep the solids suspended without adding air.

“We added biological phosphorus removal because in Vermont, reducing phosphorus discharges to Lake Champlain is a major goal.”

CHELSEA MANDIGO

“What makes us successful with that program is our cogeneration system,” Mandigo says. “These events are typically at night when everyone is home using power. We take our cogen system off for the day to store as much gas as possible. Then at night when that peak window comes, we run the cogen system at the full output. We almost hit net zero when that happens.”

NUTRIENT REDUCTION

While reducing power consumption, the plant team added treatment steps to reduce nutrients in the effluent. “We added biological phosphorus removal, because in Vermont, at least on this side of the state, reducing phosphorus discharges to Lake Champlain is a major goal,” Mandigo says.

Essex Junction is just outside Burlington. The treatment plant (3.3 mgd design, 2 mgd average) has an activated sludge process with chlorine disinfection before discharge to the Winooski River, a Lake Champlain tributary. Biosolids are land applied; liquids go to a farm field and dewatered cake is shipped to a facility in upstate New York.



Solar walls like this one help heat buildings at the Essex Junction plant.

Biological phosphorus removal involved creating an anoxic zone with low-power mixers (INVENT) that operate slowly, limiting aeration while keeping solids suspended.

PILOT PROJECT

The plant upgrade also added a centrifuge (Alfa Laval) for biosolids dewatering. Centrate from the centrifuge can be piped back to the front of the treatment process, but it is rich in nutrients. The plant is pilot-testing a process for harvesting nutrients from the centrate.

“We’ve found that we cannot recycle that centrate in the quantity we produce it, because it’s too strong,” Mandigo says. “It kills our bugs. We have to net meter it back in over a week’s time.” The PePhlo nutrient harvesting process, developed by the University of Vermont and supported by a state Phosphorus Innovation Challenge grant, involves adding magnesium to the centrate and then applying an electrical charge to the centrate pipe.

The electric charge causes struvite (magnesium ammonium phosphate) to form, and the struvite crystals are collected on membranes (Kubota). The

struvite can be used in fertilizers, and the centrate then contains less phosphorus and ammonia.

“Our goal is to treat our centrate so it doesn’t have to be net metered and become our limiting factor, because right now, it only allows us to do one trailer a week,” Mandigo says. “That’s fine since we still have a land application program, but if that goes away with the PFAS regulations that are only a matter of time, we won’t be able to keep up with our solids management.”

Early indications are that the project is working. “The question is: Can we treat the sidestream from dewatering and get the phosphorus out of there?” Mandigo says. “We’re in the pilot stage, but tests found 85% to in some cases 90% removal from that sidestream.”

If the process scales up successfully, it will represent another in the long list of efficiencies applied in Essex Junction. **tpo**

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A Better Way to Train

REGISTERED APPRENTICESHIPS THROUGH STATE RURAL WATER ASSOCIATIONS ARE HELPING SMALLER UTILITIES ATTRACT AND DEVELOP OPERATORS AND BOOST INDUSTRY PROFESSIONALISM

By Ted J. Rulseh

Hiring and retaining excellent operators remains a challenge for drinking water and clean-water utilities. An excellent way to meet it is through registered apprenticeships.

For six years, the National Rural Water Association has offered such apprenticeships, delivered through its state affiliates. NRWA provides guidelines to the states that lay a solid foundation for apprentices to thrive during their training and in the careers that follow.

Apprentices go through what is typically a two-year program. From classroom instruction and on-the-job training, they acquire the tools they need to become successful water or wastewater operations specialists. They earn while they learn under the mentorship of experienced staff at treatment facilities.

Those who complete apprenticeships enjoy a wide range of career prospects across the country, with no student loans to repay. Utilities benefit from access to skilled professionals ready to be strong contributors to daily operations.

Shannan Walton, NRWA director of workforce development, notes that for many utilities, apprenticeships represent a change from the classical emphasis on licensing and certification alone for training and developing newly minted operators. Walton, who has worked on registered apprenticeships for 26 years, talked about the NRWA program and its value in an interview with *Treatment Plant Operator*.

tpo: What is the background of the NRWA Apprenticeship Program?

Walton: In 2016 the NRWA leaders began researching registered apprenticeships under the U.S. Department of Labor. They attended an apprenticeship accelerator event where panelists from other industries talked about how they were successful using registered apprenticeship as a training model. In 2017 NRWA worked with the Department of Labor to develop National

Guideline Standards of Apprenticeship. The intent was to provide technical assistance for state affiliates to take those national standards and modify them for adoption locally.

tpo: What were the core objectives of the apprenticeship program?

Walton: The hope was that training people in a systematic and structured way would help advance professionalism in the industry and eventually advance the wages operators would be paid in the rural communities. Essential to this was to develop a program where every apprentice across the nation would get the same type of training no matter what type of system they were in, as opposed to licensing requirements, which differ greatly from state to state.

Traditionally, our industry has focused a great deal of training on test preparation, studying to pass a test. On the other hand, the purpose of apprenticeships is to create foundational training. We're trying to accomplish something that other industries have been using for more than 80 years. It means changing a mindset, and it's not going to happen overnight.

tpo: How would this structured program improve professionalism across the industry?

Walton: Our leadership believed that if rural America was to be ground zero for training, and if the new operators would eventually move on to larger systems able to pay better, then they should be trained well from the beginning. In that way we would create a constant pool of talent to help utilities replace people being lost to higher-paying jobs, or to retirement.

tpo: In basic terms, what do the apprenticeships include?

Walton: It is a two-year program in which the apprentices receive 4,000 hours of on-the-job training with a mentor from the utility, and 144 hours of related technical instruction — essentially classroom work — per year.

tpo: How well was the apprenticeship program received by state rural water associations?

Walton: It received approval from the Department of Labor in July 2017 and, astoundingly to everyone, there was immediate buy-in from several state rural water associations. We started with five states that were interested at the very beginning. Today we have active programs in 36 states, and we're developing the Standards of Apprenticeship in three others.



Shannan Walton



The Urbana & Champaign Sanitary District has four operators in apprenticeships under the Illinois Rural Water Association. Shown from left are mentors Wade Lagle, director of operations and Justin Profancik, operations supervisor; and apprentices Dan Bowen, Joe Garrett, Curtis Clark and Brandon Heid.

tpo: What do you believe might be holding the other 11 states back?

Walton: One concern is employer buy-in. An apprenticeship program can be a heavy life for a rural utility. In the construction trades, employers of apprentices are for-profit businesses. Our employers are municipalities in which taxpayer dollars fund everything. A utility in a state where an operator needs only one year of experience and 60 hours of continuing education to take a licensing test might question why they should invest in a much more extensive program.

tpo: Why are apprenticeships of particular value for rural utilities?

Walton: It begins with recruitment: finding people from rural communities and explaining to them what the occupation is, that it's a viable pathway into a career. It's telling them they can provide a service to their community. It's also about setting up a succession plan for operators planning to retire. Instead of having that person with all the institutional knowledge just walk out the door, they can position themselves with an apprentice being trained under that mentor. Then they're set up for succession when that experienced person leaves.

“The employer has to appreciate that registered apprenticeship is a different approach from relying on licensing and certification.”

SHANNAN WALTON

tpo: What is the benefit of recruiting apprentices versus already-certified people?

Walton: When utilities are looking for people who are already licensed operators — if they keep doing what I call HR cannibalism — they're not doing anything to secure the future of the industry. So instead of saying they need a 100% proficient operator who already has

A UTILITY'S PERSPECTIVE: “TREMENDOUS VALUE”

Just one year's experience has sold Wade Lagle and Justin Profancik on the value of registered apprenticeships for wastewater operators.

Their employer, the Urbana & Champaign (Illinois) Sanitary District, has four apprentices on board under a partnership with the Illinois Rural Water Association. “The partnership is great, and we look forward to a bright future with it for a long time,” says Profancik, operations supervisor. He and Lagle, director of operations, have seen benefits in recruiting, training quality, new team members' success in passing licensing exams, and more.

The district enrolled its first two interns, Dan Bowen and Joe Garrett, in July 2023 and last March added Curtis Clark and Brandon Heid. In a two-year program under the umbrella of the National Rural Water Association, they will receive 4,000 hours of paid on-the-job training and 288 hours of coursework, mostly by self-study on their own time.

“It's a great way for new people to learn about wastewater collection and treatment from beginning to end,” Lagle observes.

FILLING A NEED

Founded in 1921, the Urbana & Champaign Sanitary District serves a population of 150,000 and operates the Northeast Treatment Plant (17.3 mgd design) and the Southwest Treatment Plant (7.98 mgd design), both with activated sludge processes. The collection system includes 28 pumping stations, 131 miles of sewer lines and 18 miles of force mains.

In 2023, at the IRWA's request, the district agreed to host a classroom portion of the apprentice studies for the state's East Central Region. Monthly two-hour sessions reinforce self-study by reviewing wastewater math and other challenging material.

The district later decided to enroll apprentices of its own. Lagle notes that apprenticeships can help his district and the industry at large build a talent pool to replace experienced operators being lost to retirement. It also helps the district broaden its range of potential hires: It's no longer necessary to look for people with significant experience in the field.

Now the district can bring people on board who may lack direct experience but exhibit qualities like attitude, work ethic and team orientation that make them a good fit, and teach them the knowledge and skills they need — without having to send them elsewhere for extended periods for education and training.

“We haven't used the program to promote our jobs yet because we just recently started this,” says Profancik. “But I believe in the future it's going to be a useful tool. We'll no longer have to say in our job description that experience is strongly recom-

mended. Now we can say that we provide in-house and on-the-job training. Applicants can apply and accept positions confidently because we have a proven training partnership with Illinois Rural Water.”

LEARNING PATHWAYS

The apprenticeships are voluntary for new hires. The district does require operators to obtain entry level Class 4 Wastewater Operator certification within their first 18 months. Here the apprenticeships have already helped, as Bowen and Garrett passed their Class 4 and Class 3 licensing exams on the first try, even though they came with essentially no wastewater experience.

Apprentices take their course work through the California State University, Sacramento; IRWA provides the books and materials for the Operations 1 and 2 and Collections 1 and 2 courses. The technical education program also includes wastewater treatment plant tours.

During on-the-job training, apprentices rotate among the three weekday and two weekend shifts at the Urbana & Champaign district's two treatment plants. “They're exposed to all those shifts because things can be different on every shift,” Profancik says. “And that way they share experiences with the different operators and learn how they look at things.”

Apprentices are required to log their hours daily, and as mentors Lagle and Profancik verify that they complete their course work and on-the-job training hours. Both are grateful for the support they received from the IRWA.

“Grant funding provides all the materials for the apprentices,” Lagle observes. “It covers a list of optional tools they can use for on-the-job training. For the coursework, it provides them with a laptop computer or other device to log on and do the course work at home, if they don't have that capability.

“Jeff Tumati, who is apprenticeship coordinator at Illinois Rural Water, has been wonderful to work with. He has helped us through what is a pretty extensive procedure to get our apprentices enrolled and set up in the program.”

TRUE BELIEVERS

Lagle and Profancik are glad to recommend the apprenticeship program to their counterparts at other utilities. In fact, says Lagle, “I've already done that. We've had other facilities reach out, and I've sent them information on how we do it and how successful it has been for us.

“I would encourage them to adopt it. It provides a tremendous value to the employees, to the district, and to the other staff members who work here. It's a great fit for anyone.”

a license, they can change their mindset to finding someone who starts with about 50% of the necessary skills, and then training them.

tpo: How many people have been trained through the apprenticeships since inception?

Walton: As of last Dec. 31, we had 517 apprentices registered in the program, and 219 had completed apprenticeships. The numbers of applicants demonstrate the success of our outreach. In 2021-22, we had 620 applicants in our system. In 2022-23 we had 1,724.

“We started with five states. Today we have active programs in 36 states, and we’re developing the Standards of Apprenticeship in three others.”

SHANNAN WALTON

tpo: How do the NRWA and state affiliates promote the apprenticeships?

Walton: Each state rural water association has an apprenticeship coordinator. They and NRWA provide training webinars for employers. We start out with a kind of registered apprenticeships 101, going through basics and building out from there. All the coordinators travel around their state talking to employers. They also promote the program through their annual conferences and through partnerships with state workforce service offices and community-based organizations.

tpo: How much flexibility do the state affiliates and local utilities have in structuring apprenticeships?

Walton: State programs have some flexibility in what the 4,000 hours of on-the-job training consists of, and there is some flexibility in the technical instruction. States also can decide whether licensing is required as a part of the apprenticeship, or is additional expectation on the part of the employer.

tpo: What specific competencies are apprentices expected to acquire?

Walton: The 4,000 hours are broken down into five basic categories, and mentors receive an outline of approximately how much time they need to spend with the apprentices in those specific work processes. The five areas are tools, equipment and workplace safety; vehicles and special equipment; systems operation and maintenance; quality control; and logistics, reports and supervision.

LIKE A BROTHERHOOD

Chad Kistler is not your typical wastewater treatment apprentice.

Approaching age 55, he completed his two-year Illinois Rural Water Association apprenticeship last May at the wastewater treatment plant in Tilton. Along the way he passed his exam for Class 2 Wastewater Operator certification (second highest).

Once officially certified, he will become the operator in charge at Tilton’s activated sludge treatment plant (0.4 mgd design, 0.2 mgd average). Tilton, population 2,600, lies in east-central Illinois, about 30 miles east of Champaign-Urbana.

Before joining the apprentice program, Kistler had operated his own excavating business since 1997, installing septic systems and doing sewer repairs. In that role he had done sewer maintenance for the nearby village of Catlin, working with Plant Manager Tim McFadden.

Kistler recalls, “I learned that Tilton was building a new wastewater treatment plant, and I told them if they needed an operator, I’d be interested. Half an hour later I got a phone call from the mayor.” He was hired in March 2022 and two months later, at McFadden’s urging, enrolled in as an apprentice under the IRWA.

“I think it’s an awesome program,” he says. “It’s a real good way for younger people to get the training and education they need to have good careers. One thing program coordinator Jeff Tumiati told me really hit home. He said that no matter what, water and wastewater are pretty much recession-proof. We’re always going to need plant operators.

“I tell everybody the apprentice program is like a brotherhood. There are other apprentices I’ve had classes with and got to know. In time those will be people around the state who I can call upon for help. Illinois Rural itself has grown tremendously. I talk to a lot of the guys who work there almost every week, and I feel like they’ve got my back.

“If I have a problem, there are people I can talk to, and I’ve come to know them personally. Especially with the new plant coming on board, I have a

lot of questions. Jeff Tumiati, Scott Tozier and Kent Cox have all helped quite a bit. I wouldn’t be where I am without them. People say the Class 2 is the hardest wastewater license to get and, if I’d had to do it without Illinois Rural, I’d have probably said to heck with it.”

McFadden served as Kistler’s mentor for the apprenticeship while operating the Catlin treatment plant. He officially retired in August 2023 but remained in charge of the Tilton plant while Kistler earned his certification.

“There’s a lot to learn,” Kistler says. “There’s more to it than people think. You’ve got to be part chemist. There’s a lot of math, and a lot to do with pumps and the process in general.

“I know some younger people coming in think it’s just poo. Well, it is, but it’s not. It’s a challenge. It seems like every day, something new pops up that you’ve got to figure out.”

Kistler sees apprenticeships as essential for an industry that is losing many experienced operators to retirement: “Last year I attended a conference, and 80% of the people walking around were retirement age. And there aren’t many young ones coming up.”

Apprenticeships help newcomers make an easier transition into operator careers, he believes: “A kid who used to work for me went to work at a treatment plant before the Illinois Rural program came about. He struggled because he had to learn everything on his own, and he ended up quitting. If Illinois Rural had been around to help, maybe he would have followed through.

“It’s an interesting career. You’re doing a service for the community and the people, while making a good living for yourself. It’s something you can be proud of.”



Chad Kistler

tpo: Where do apprentices receive their classroom instruction?

Walton: It varies from state to state. Some state programs have their own instructors. In some states the technical instruction is 100% face-to-face, instructor-led. In some states it’s blended between instructor-led and online self-paced self-study. Some states use instructor-led online training. It’s a mix.

tpo: Does the NRWA itself provide resources for the technical education?

Walton: We offer a learning management system called Water Pro Academy. We also offer a mix of courses to our state associations. Early on we developed a memorandum of understanding with the California State University, Sacramento, Office of Water Programs, under which we make their study materials available to instructors and apprentices.



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tpo: How do apprentices, mentors and NRWA track progress in the program?

Walton: We have a phone app where the apprentices can report in real time what processes they are working through. They track those 4,000 hours, and the information is automatically uploaded into our system. Their mentors can go in and validate that, and they can also provide monthly evaluations of the apprentices. What is working? What is not working? Is the apprentice struggling in class? Do they need extra help?

tpo: Are there any special requirements of utilities that take on apprentices?

Walton: The way registered apprenticeship is structured, it is meant to work as a system. Success happens when everybody involved treats the apprenticeship differently from what they have always done before. The employer has to appreciate that registered apprenticeship is a different approach from relying on licensing and certification. Applying all of it as a system in practice is what makes it successful.

tpo: What would you tell leaders of rural utilities about the value of apprenticeships?

Walton: I would first ask what the issues are with their workforce. Do they have a succession plan? Are they able to retain people? Is it hard to find new talent? And I would point out how apprenticeships can be a solution to all that. There are great opportunities in this industry in rewarding, pay-it-forward-to-your community kinds of occupations. **tpo**

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SCREW CONVEYOR SEALED FOR 12 YEARS AND STILL GOING!

CASE STUDY

PROBLEM: A sludge conveyor at a Florida wastewater treatment plant experienced frequent ball-bearing replacements, causing substantial downtime and maintenance costs. Sludge penetration into the pressurized ball-bearing cases accelerated wear, leading to failure within nine months of each rebuild.

SOLUTION: SealRyt introduced a PackRyt® Bearing coupled with a redesigned housing featuring a pressurized air flush system. The PackRyt BLR, with minimal clearances, effectively seals the 4" shaft, preventing movement and eliminating sludge entry. The patented design, devoid of internal moving parts, ensures longevity. Installed in September 2012, the PackRyt® has run continuously without replacement or adjustment, showcasing SealRyt's expertise in crafting reliable shaft solutions.

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Upping the Ante

SOUTH FLORIDA WATER UTILITY USES CENTRIFUGES TO CUT COSTS AND PRODUCE DRYER CAKE TO MEET A NEW LANDFILL REQUIREMENT

By John Yacilla

Seacoast Utility Authority was using belt presses to dewater biosolids to 13-15% solids and hauling it to a facility to be composted for agricultural use.

A challenge came when the composting facility converted to pelletizing the biosolids. For optimal performance that process required cake at 20% solids. The authority then was faced with finding a dewatering technology that could reach the required cake dryness in a footprint the same size as or smaller than the belt presses. After a careful evaluation of alternatives, the authority chose a decanter centrifuge manufactured by Flottweg.

TESTING TECHNOLOGIES

Seacoast Utility Authority is a wastewater and reclaimed water utility that furnishes potable water to 47,000 households and 2,700 commercial establishments in a 65-square-mile service area in Palm Beach, Florida. To select a dewatering method, the authority ran pilot tests with screw and rotary presses, which did not meet the performance requirements. The team then tested centrifuge decanters from several manufacturers to compare features and performance.

Ultimately the authority team selected Flottweg C-series centrifuges, which could dry biosolids to several percentage points higher than the 20% requirement. Because the machines' maximum solids content level was too dry for the pelletizing company, control adjustments were easily made to consistently achieve 20% solids.

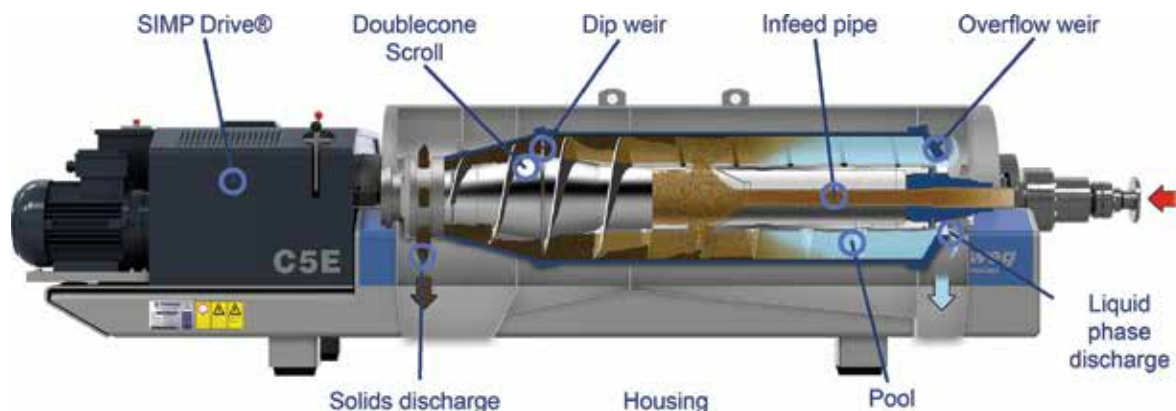
Flottweg engineering staff worked closely with a third-party engineering firm to make sure the transition from belt presses to centrifuges and installation and startup went smoothly.

REMOVING THE WATER

C-series centrifuges are designed to deliver high dewatering performance with low energy consumption. During the process, solids are thrown to the inner wall of the centrifuge bowl by G-force created from acceleration. The material is discharged by way of a scroll through the conical section of the bowl, and the clear water (centrate) is discharged at the opposite end.

The C-series decanter's scroll has a double cone and a baffle plate. The double cone reduces the distance between the decanter bowl and the scroll and presses the solids against the baffle plate. This increases the dryness and separates the solids discharge end from the centrate, creating a deeper pond inside the bowl.

The deeper pond enables lower energy consumption, greater capacity, and longer residence time for the solids to separate from the free water. A specially designed scroll maximizes cake solids content, and a seemingly small increase can mean significant savings.



C-series centrifuges are designed to deliver high dewatering performance with low energy consumption (Flottweg). During the process, solids are thrown to the inner wall of the centrifuge bowl by G-force created from acceleration.



Seacoast Utility Authority operates its centrifuges and conveyor system three days per week, 24 hours per day, with minimal maintenance.

For example, a solids content increased from 23% to 25% means an 8% reduction in cake volume. That in turn reduces transport and disposal costs by 8%. The C-series centrifuges include a Simp Drive feature that allows the bowl speed and the scroll differential speed to be controlled independently. This ensures constant cake dryness under varying feed conditions.

AUTOMATED PROCESS

Automation enables the centrifuges to operate continuously with minimal attention from authority staff. Bowl and differential speeds can be auto-

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matically controlled with the Simp Drive. Flocculant dosing can also be automated; polymer demand is monitored in real time to optimize consumption.

Multiple remote monitoring and service options are available. Centrifuge control can be integrated with the treatment plant control system for efficiency and operational safety.

The C-series centrifuges are designed for easy maintenance access. The bowl and scroll can be quickly removed and reassembled, minimizing downtime. Worn parts can be easily replaced on site. In addition, the centrifuges have a comprehensive wear protection package. The inlet and outlet openings are engineered against wear, and all components in contact with the biosolids are made of stainless steel, extending service life.

SUBSTANTIAL SAVINGS

For the past several years the Seacoast Utility Authority has operated its centrifuges and conveyor system three days per week, 24 hours per day, with minimal maintenance. The machines have consistently produced material meeting pelletizing company requirements.

The authority has reduced maintenance time and expense and saved money by reducing hauling costs. Previously, about 15 truckloads per week were taken to the composting site. Now, seven to eight loads are hauled for pelletizing. The centrifuges are enclosed systems, enabling clean and safe conditions within the building.

The authority has reduced maintenance time and expense and saved money by reducing hauling costs.

ABOUT THE AUTHOR

John Yacilla (jyacilla@flottweg.net) is environmental industry manager for Flottweg Separation Technology. tpo

case studies

CONVEYANCE AND DISTRIBUTION SYSTEMS

By Craig Mandli

Bearing system keeps conveyor in operation long term

Problem

A Florida wastewater treatment plant was replacing screw conveyor ball bearings much more frequently than the recommended interval, at great expense in downtime and labor. A 4-inch shaft drives the conveyor screw. Sludge penetrated the pressurized grease-sealed ball-bearing cases, accelerating wear and eventually causing complete failure after about nine months.

Solution

SealRyt designed a **PackRyt bearing** from its own SR01081 material, along with a reconfigured housing with a pressurized air flush system. The PackRyt BLR (bearing with integrated lantern ring) is designed with close clearances to eliminate shaft movement, allowing it to seal effectively. Once the shaft has been stabilized, the air flush system creates a pressure differential that keeps sludge from entering between the bearing and sleeve, eliminating excessive wear. The design has no internal moving parts.



RESULT:

The bearing was installed in September 2012, and it continues to function without replacement or adjustment. 413-564-5202; www.sealryt.com tpo

Comeback Kids

DAVID MILANO AND HIS TEAM IN THE CONNECTICUT TOWN OF CHESHIRE TOOK PRIDE IN BRINGING THEIR PLANT BACK FROM NOTICE OF VIOLATION STATUS IN JUST ONE YEAR

STORY: **Ted J. Rulseh** | PHOTOGRAPHY: **John Marinelli**

David Milano wasn't the first person offered the assistant superintendent job at the town of Cheshire Wastewater Treatment Plant.

"The job was offered to people before me, and they turned it down based on what the plant looked like," says Milano. What it looked like when Milano came on board on April 1, 2022, was a plant in disrepair.

It had been under a Notice of Violation from the Connecticut Department of Energy and Environmental Protection since late December 2020. Effluent TSS was running in the neighborhood of 200 mg/L. Phosphorus discharges exceeded the permit limit of 4.06 pounds per day (annual average). Mixed liquor suspended solids were at about 10,000 mg/L.

Milano and his team went to work. By September the plant was meeting its permit and the Notice of Violation was lifted. "I looked at the glass as half-full," Milano says. "When I first saw the plant I said to myself, 'I don't know if I can do this.' But when you tap into your experience and all the things you've seen, you realize you're not going to fail. My father always told me, 'There's no failing if you continuously try to be better every day.' That's basically all we did."

TEAM ENTERPRISE

For his and his team's effort, Milano received the New England Water Environment Association's 2023 Wastewater Operator Award for Connecticut.

Vanessa McPherson, state director for Connecticut with NEWEA, observes, "David is a passionate operator who is highly collaborative and reaches out to fellow operators regularly to discuss optimizing his plant. By implementing new process controls, fixing deferred maintenance, and rebuilding morale with leadership and inclusiveness, he achieved a significant turnaround in plant performance."

Milano, now plant superintendent, emphasizes, "The award really belongs to the team. Without them I couldn't have implemented anything we did. I told them now that we have the numbers, maybe the plant can win an EPA award. I would like to do something like that for them. They worked hard and they deserve it."

Team members are John Cronin, lab director, Class IV license; Mark Carusillo and Paul Christian, Class III operators; Robert Benigni, Class II operator; Mario Orsini, Class I operator; Jeffrey Cifarelli and Matthew Hannon, operators-in-training; and Greg Caldwell, electrician/mechanic.

ACCEPTING A CHALLENGE

Milano grew up in North Haven, Connecticut. After high school he earned an electrical certificate from Lincoln Technical Institute in Hamden. His 13 years in the clean-water industry include seven years with the town of Southington and a year at a privately owned treatment plant in Southbury.



David Milano, assistant superintendent, adjusts the polymer dosing to the belt filter presses.



“There’s no failing if you continuously try to be better every day. That’s basically all we did.”

DAVID MILANO

The team at the Town of Cheshire Wastewater Treatment Plant includes, from left, Jeffrey Cifarelli, operator-in-training; Mark Carusillo, operator; Greg Caldwell, electrician/mechanic; David Milano, assistant superintendent; and Matthew Hannon, operator-in-training.

The town of Cheshire plant was built in the early 1970s, expanded in the 1990s and upgraded in 2005 for nitrogen removal. The latest upgrade was in 2015 for phosphorus removal. When Milano arrived, the plant was in dire need of maintenance and repair. Among other things, the grit channel was full. Tanks were filled with sludge. The final clarifiers had 12-foot-deep sludge blankets. Pumps and other equipment were out of service.

“There was a lot of work to do,” says Milano. It was a matter of team members simply rolling up their sleeves and getting to it. They started by using a claw-style bucket to empty the grit channel and protect downstream equipment.

One by one, they shut down the primary clarifiers, performed maintenance on them, cleaned them, removed settled grit, changed oil and rehabilitated motors. “Throughout that time, we started wasting more,” says Milano. “We had to waste at least 50% of our inventory of solids, going from 10,000 mg/L MLSS to 5,000.

“We’re a small plant, and we haul our own biosolids. We had to work double shifts for a while in summer to make a dent in our solids inventory. We put new belts on our belt filter presses. We installed new pumps for the rotating drum thickeners.”

Team members adjusted loading to the anaerobic digesters. They replaced lamps and ballasts on the UV disinfection system. They rebuilt or replaced the pumps on the rotating disc filters used for phosphorus removal. Veolia Water Technologies serviced the filters, installed new screens and replaced three backwash pumps.

Town of Cheshire (Connecticut) Wastewater Treatment Plant

cheshirect.org

BUILT:
Early 1970s, upgrade 1990s, 2005, 2015

POPULATION SERVED:
29,000

TEAM MEMBERS:
9

FLOWS:
4 mgd design, 2.8 mgd average

TREATMENT PROCESS:
Activated sludge, rotating disc for phosphorus removal

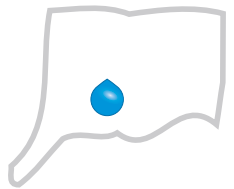
TREATMENT LEVEL:
Tertiary

BIOSOLIDS PROCESS:
Anaerobic digestion, dewatering

BIOSOLIDS:
Incinerated off site

RECEIVING WATER:
Quinnipiac River

ANNUAL BUDGET:
\$4.2 million (operations)



PULLING TOGETHER

The plant turnaround began with the town’s leadership, including the town Water Pollution Control Authority, a seven-member elected body that oversees the wastewater department. Milano observes. “When I started, I told them I could fix it, but it was going to cost money and a lot of trust.

“They were very receptive. They didn’t want to look like they didn’t care about the environment or the town. It took a team effort from top to bottom. I have a meeting with the WPCA once a month,

SUCCESSION PLANNING

The four most experienced operators at the clean-water plant in Cheshire are all at retirement age. Lab director John Cronin has 30 years of service “They could pretty much retire whenever they want,” says David Milano, plant superintendent. “I expect every senior operator we have now will be gone within five years.”

That makes succession planning a priority: “We need to start grooming the next group of operators who are going to work here for the next 20 or 30 years,” Milano says.

To that end, he convinced the town council to create an operator-in-training position so that he can hire people who have little or no experience and no licensing and train them up. He recruited Jeffrey Cifarelli from a nearby town where he had six months’ experience.

Matthew Hannon had been a personal fitness trainer for 10 years and was looking to change careers. “He read the Sacramento book in his spare time at home and showed great interest in the field,” Milano says. Cifarelli and Hannon sat for their Class I license exams in late 2023.

Milano advertises openings on the Connecticut WEA website and talks up his plant at networking events. He also posts openings on his LinkedIn page. He prefers people with some mechanical, plumbing or electrical background, along with a CDL to drive the town’s sewer cleaning and dump trucks. He also looks closely at character.

“I like to hire based off their morale and their personality,” he says. “I worked hard to build our team’s morale, and it only takes one bad seed to throw a whole group off. I can teach anybody about pumps and process, but I can’t teach someone how to be a good person. If they’re a good person to start with, I’ll take that any day.”

and I tell them the support I need. Then they talk to the town council and the town manager.”

Milano notes that his team members have diverse skills that came into play in restoring the plant. He leaned on Fran Gervais, an operator who had just months left before retirement, to lead the project’s mechanical components. Working closely with him was Greg Caldwell, a certified electrician. Milano and lab director Cronin dealt with the process; the other operators pitched in wherever needed.



David Milano and Mark Carusillo install new packing in the primary sludge pumps.

Town of Cheshire Wastewater Treatment Plant PERMIT AND PERFORMANCE

	INFLUENT	EFFLUENT	PERMIT
BOD	70 mg/L	8 mg/L	30 mg/L monthly limit 50 mg/L daily maximum
TSS	145 mg/L	2 mg/L	30 mg/L monthly limit 50 mg/L daily maximum
Nitrogen	23 mg/L	2 mg/L	N/A
Phosphorus	2.5 mg/L	<0.05 mg/L	0.31 mg/L monthly average 0.62 mg/L daily maximum

“It was nice for the newer guys to come in at the tail end of it,” Milano says. “We showed them everything that we replaced. We showed how bad things can get if you’re complacent, if you ignore things. It was a learning experience for all of us, and I include myself.”

“It was great to have the older operators on board. They were like the pioneers in the field. They knew how to fix things. Years ago you fixed everything in-house. I was lucky to have Fran and other operators who knew how to do all those things. I could tell them to switch out a pump and they knew how to do it. It was a lot of work, but we had the right staff.”

LEADING THROUGH CHANGE

A key to motivating the team was “making friends with everybody,” Milano recalls: “Morale was low. I let them know I wasn’t here to be a boss. I was here to help. Most of our team members are close to retiring. I showed that I wasn’t some young kid who thought he knew better than everybody. I wanted them to be able to retire and say, ‘Hey, we fixed this.’ They rallied behind that idea.

“I wasn’t there to degrade them and ask why things became so bad. I didn’t care about why. I cared about now. Anybody can sit in a room and point fingers. My approach was: Let’s figure out a plan of attack to get this plant back to being good.

“I didn’t want to work that hard every single day, and when you have a failing plant, that’s what you do. I told them once we got everything sorted out, we would reach a point where it was all just planned maintenance. You don’t want to worry every single day what is going to break. You have to get into a proactive instead of reactive state.

“They really did come along. They’re a good group. Yes, I’m the superintendent, but we’re all friends. When we have to work, we work hard. When we have downtime, we don’t avoid each other. We talk about family, grandkids, who’s doing what for the weekend.”

“It was great to have the older operators on board. They were like the pioneers in the field. They knew how to fix things.”

DAVID MILANO

RUNNING RIGHT

Now the plant is running smoothly and in compliance. “The belt presses are putting out 20% solids,” Milano says. “We’re down to doing hauling maybe three truckloads of biosolids a week. The digesters are healthy again. We went all of 2023 with a full pathogen kill. We met our seasonal phosphorus limit for the first time in three years.”

The plant uses a conventional activated sludge process to treat an average of 2.8 mgd of mostly domestic wastewater. Industrial users include a large brewery nearby. Wastewater is delivered through a 120-mile collection system that includes 10 pump stations. It first goes through a Muffin Monster screen (JWC Environmental) followed by the aerated grit channel.

The flow then passes to four primary clarifiers. Primary sludge is either pumped directly to the primary digesters or to the belt presses. The prima-

Milano, shown looking over a polymer pump (Verder), says he came to the aging Cheshire treatment plant with a “glass half-full” attitude.

ries are followed by five aeration tanks with air delivered by turbo blowers (Sulzer) and fed via fine-bubble diffusers (Sanitaire, a Xylem brand).

The flow then passes to two final clarifiers. Waste activated sludge is sent to rotating drum thickeners and then to the digesters. Clarifier supernatant flows to a denitrification building with upflow media filters (Veolia Water Technologies), where methanol is added as a carbon source. Tertiary treatment for phosphorus removal is provided by the rotating disc filters (also Veolia

“I’m a firm believer that we should be giving back to the environment. I take that pretty seriously.”

DAVID MILANO

Water Technologies). Filtered effluent is UV-disinfected (Trojan Technologies), re-aerated and pumped to the Quinnipiac River.

The plant is staffed on the day shift Monday through Friday; on-call operators do weekend checks. A SCADA system designed by Knapp Engineering with WIN-911 alarm software (SmartSights) monitors the facility. An in-house certified lab handles compliance and process control samples.

A major project on the near-term agenda is reducing I&I, much of which enters through old clay pipes in the collection system. Rain events of 2 to 3 inches can double or triple influent volume; Milano has seen flows as high as 12 mgd. An I&I study is now in progress.

BUILDING THE TEAM

With the process back on track, Milano focuses on boosting operators’ skills and licensing levels. When he arrived he was the only Class III licensed operator. Now two operators have attained Class III.

Training has been accelerated. Team members attend courses and conferences sponsored by NEWEA and the Connecticut Water Environment Association; Milano is a member of both and is part of the NEWEA Young Professionals group. He signs up younger operators for classes he considers valuable. Those include free online courses offered by Veolia Academy.

Milano looks back with pride on his tenure with the town of Cheshire. “I’m a firm believer that we should be giving back to the environment,” he says. “I take that pretty seriously. I don’t want to be polluting the earth and the rivers. We’re better than that now. It’s 2024 and we have the technology to prevent that. That’s why I like this field. You’re in personal control of being able to make a difference for the earth.” tpo



Milano, shown checking final clarifier sludge blankets with Matthew Hannon, enjoys being in control of a process that helps protect the environment.

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Conveyance and Distribution Systems

By Craig Mandli

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Drive

FRANKLIN ELECTRIC CERUS X-DRIVE

Designed for variable torque applications up to 600 hp, the Cerus X-Drive is Franklin Electric's all-inclusive drive solution for a variety of markets. Available as a standalone drive and in multiple enclosed configurations, these panels are built to last, according to the maker, with every detail and component centered around the application's specific requirements. It can be paired with a choice of motors and pumps to maximize the performance of the application. **866-271-2859; www.franklinengineered.com**



Cerus X-Drive from Franklin Electric

Motors

US MOTORS AERATOR DUTY VERTICAL MOTOR

Nidec Motor Corporation and its US MOTORS brand offers an aerator duty vertical motor with frame sizes up to 286 inches, ideal for biological treatment of wastewater stored in settling tanks and ponds. The aerator function introduces air to the process, facilitating the aerobic biodegradation of organic material. The motors can be engineered to meet a customer's specifications, including meeting NEMA, IEEE and API standards. **888-637-7333; www.usmotors.com**



Aerator duty vertical motor from US MOTORS



Premium Efficient Vertical HOLLOSHAFT Motors from WorldWide Electric

WORLDWIDE ELECTRIC PREMIUM EFFICIENT VERTICAL HOLLOSHAFT MOTORS

Premium Efficient Vertical HOLLOSHAFT Motors from WorldWide Electric are designed for use in turbine pump applications including irrigation, energy generation, mining, municipal water and chemical applications. Ideally suited for use with inverters or soft starts, the motors are the solution for both standard and high-thrust installations. These durable motors feature outer epoxy corrosion-resistant paint, epoxy-coated rotor and windings, and a felt end bell seal to protect from pump seal failure. **800-808-2131; www.worldwideelectric.net**

Motor and Pump Controls

AUTOMATION24 VEGAPULS C 21

The VEGAPULS C 21 from Automation24 is a noncontact, radar level sensor utilized frequently in wastewater management applications. The device has been used to monitor water levels in pumping stations and for monitoring flow in open channels and dams. It is made of resistant and durable materials to help it survive harsh industrial environments, dealing with environmental factors like a humid environment, condensation on the sensor body and foamy water. It has a measuring range of up to 50 feet and outputs a radar frequency of 80 GHz to keep a narrow 8-degree beam angle. This sensor has features that can be edited through the VEGA software, either via Bluetooth on smartphones or on a computer for more nuanced tweaks to see the true level and flow of the water that is being treated. **800-250-6772; www.automation24.com**



VEGAPULS C 21 sensor from Automation24

GORMAN-RUPP INTEGRINEX

Gorman-Rupp's Integrinex line of lift station controls is designed to ensure system performance through precise matching of controls to pumps and motors. The liquid level controls are available in four styles when combined with Gorman-Rupp ReliaSource solids-handling pump packages: Basic offers simple, reliable plug-and-play performance and is designed for accurate start/stop operation in a duplex alternating pump system; Standard includes duplex and triplex alternation, level sensors, pump delay and alarms; Advanced includes soft starters and VFDs to manage electric inrush, hydraulic shock and matching starting and stopping torque-based management and monitoring; and remote view offers all the functionality of the advanced system with the added convenience of remote-based management and monitoring. **419-755-1011; www.grpumps.com**



Integrinex line of lift station controls from Gorman-Rupp

ORENCO SYSTEMS OLS CONTROL PANELS

OLS control panels from Orenco Systems are designed and built for an array of municipal pumping applications including wastewater lift stations, stormwater pump stations, dewatering pump control, sludge pumping and freshwater boosting. The panels are available with Orenco Cloud service, which eliminates the need for a separate SCADA system. As another option, the panels can be connected to an existing SCADA system. Parameters can be configured with our user-friendly startup wizard via a remote computer or tablet or using the included touchscreen. Engineers will preprogram user interfaces to the site-specific needs of an installation, making the panel virtually "plug and play." Maintenance staff can easily adjust settings and monitor the system remotely. The panels are weatherproof and UL 508A listed. They also include service-rated circuit protection, phase and voltage protection, and level controls. **877-257-8712; www.orencosystems.com**



OLS control panels from Orenco Systems

Pipe/Parts/Components



INFILTRATOR WATER TECHNOLOGIES ECOFILTER PUMP VAULT

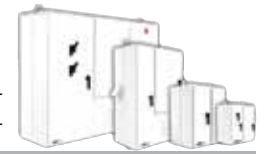
The ECOFILTER Pump Vault tank filtration system from Infiltrator Water Technologies reduces biological loading and clogging, prolonging the life of downstream drainfields and other treatment systems. Quick to install in new or existing tanks, the vault is a completely integrated system for pumping

ECOFILTER Pump Vault system from Infiltrator Water Technologies

effluent from single or double compartment tanks. It draws effluent from the clarified zone of the tank to minimize suspended solids passing through the pump system. The easy-access design maximizes the filter surface area and simplifies filter inspection and maintenance by enabling filter cartridge removal without pulling the pump or vault. Featuring a dual-compartment housing for simplex or duplex applications, the product is constructed of high-density polyethylene with UV inhibitors for longevity and the float stem bracket allows easy removal and adjustment of the float assembly. Customizable for nearly any project need, the unit is suitable for S.T.E.P. collection systems and effluent treatment. **800-221-4436; www.infiltratorwater.com**

PRIMEX ARC ARMOR ENCLOSURE

The safe, innovative, multiple compartment ARC ARMOR enclosure from PRIMEX reduces the risk of injury resulting from arc flash and electric shock by limiting access to electrical equipment capable of producing arc flash incidents. The control and power circuitry are isolated in separate compartments, where only control voltage is present (120-volt max), thus preventing unnecessary exposure of operators to arc flash. It reduces exposure to arc flash and arc blast with its multiple compartment design and single wall construction. It has a single sheet drip cap with rolled edge drip loops on free-standing models. It includes electrostatically precipitated white polyester powder coating, which reduces heat buildup, and three-point padlockable operating handles. Free-standing, wall-mount and pole-mount versions are available. **844-477-4639; www.primexcontrols.com**



ARC ARMOR enclosure from PRIMEX

Pumps

ASHLAND PUMP AGP-HC200 GRINDER PUMP

The AGP-HC200 Grinder Pump from Ashland Pump combines two cutting mechanisms to tackle waste. Its radial section efficiently grinds waste into a fine slurry, while the axial section excels at cutting and chopping stringy solids and waste into smaller, more manageable pieces. This dual-action approach ensures that even fibrous materials are easily processed and do not cause clogs in the discharge pipe. Moreover, its cutters are engineered to prevent wrapping at the inlet, a common issue with grinder pumps. Crafted from case-hardened 440 stainless steel, these cutters are not only durable, but also easy to sharpen and adjust for optimal performance. **855-281-6830; www.ashlandpump.com**



AGP-HC200 Grinder Pump from Ashland Pump



FLEXFLO M3 chemical metering pumps from Blue-White

BLUE-WHITE FLEXFLO M3

FLEXFLO M3 chemical metering pumps from Blue-White dependably deliver smooth and accurate chemical dosing. It includes a bright, easy-to-access and highly responsive 5-inch display screen, and the intuitive screen is as simple to operate as a cellphone. They have a broad 10,000-1 turndown ratio to meet a vast range of dosing requirements, and they're equipped with a brushless DC motor for trouble-free and energy-efficient service. Remote control signal options include Pulse, 4-20mA, Modbus TCP, EtherNet IP and PROFIBUS for enhanced supervision and automation for critical metering and transfer applications. **714-893-8529; www.blue-white.com**

BOERGER BLUELINE

Boerger BLUEline rotary lobe pumps are a self-priming, valveless, positive displacement pump used for conveying viscous and abrasive materials. They are resistant to wear and provide pulsation-free operation. Operation is fully reversible with dry-run capability and flow rates up to 7,000 gpm. They are constructed with maintenance-in-place design, allowing for all wetted parts to be easily replaced through the front



BLUEline rotary lobe pumps from Boerger

cover without removing pipe or drive systems. The pump conveys biosolids (primary, waste activated sludge, return activated sludge, digested, thickened, etc.), grease, sewage, scum, lime slurry, alum sludge, permeate and polymers. **612-435-7300; www.boerger.com**

CAT PUMPS STAINLESS STEEL TRIPLEX PUMPS

Cat Pumps stainless steel triplex pumps mounted to a gear motor can provide thousands of hours of maintenance-free slip pump service. Direct-coupling the pump to a gear motor offers many advantages, including a smaller footprint, reduced noise and ease-of-service with no belts to maintain. A 316 stainless steel manifold, paired with elastomers like NBR, FPM, EPDM or PTFE, allows many chemical and fluid compatibility options. Performance specifications range from 0.1 to 100 gpm and 100 to 10,000 psi. Custom builds can include pump(s), motor(s), base, pressure control valves, pressure gauges and/or pulsation dampeners. Custom builds typically have a three- to four-week lead time with individual pumps and repair parts usually being in-stock items with 95% of orders shipped within 24 hours of placement. **763-780-5440; www.catpumps.com**



Stainless steel triplex pumps from Cat Pumps

CRANE PUMPS & SYSTEMS ENVIE3



envie³ pump from Crane Pumps & Systems

The envie³ air-filled motor series dry pit submersible pump from Crane Pumps & Systems can run in wet applications and in dry pits. These pumps outfit Barnes' and Deming's nonclog and chopper wet ends with a premium efficient/IE3 motor that can run in both vertical and horizontal configurations. The closed-loop glycol cooling system allows for easy maintenance and

installation in demanding applications. For easy serviceability, the horizontal installation options include a cart system, which creates a back pullout option as well as a fixed bracket configuration. Install horizontally for a smaller footprint. Vertical installation configurations include a metal and concrete stand that allow for 360-degree rotation for adapting to existing piping, including tangential discharge pumps. **937-214-9008; www.cranepumps.com**

NETZSCH PUMPS USA TORNADO T1 GENERATION F

The TORNADO T1 Generation F pump from NETZSCH Pumps USA is versatile for just about any orientation and installation. Its robust design offers longevity, operational flexibility and dry-run capabilities. It allows the pump to operate and handle many upset process conditions without causing harm to the pump. The pumps are available up 4,000 gpm and 145 psi, and can handle a wide range of viscosities, solids, temperature, abrasion and corrosive/acidic process fluids and environments. The Full Service-in-Place pump has a front pullout design that allows for easy access for maintenance and inspection. Opening the front cover allows access to the wear plates, lobes and seals, making it easy to service. Additionally, there is no need to access the timing gears or bearings, as they are protected with the NETZSCH Gearbox Security System. This desirable feature protects the gearbox from the process side of the pump (wet-end). **610-363-8010; www.pumps-systems.netzsch.com**



TORNADO T1 Generation F pump from NETZSCH Pumps USA

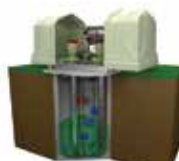
PULSAFEEDER PULSAAPRO7440

When chemical injection processes demand dependable and accurate delivery where space is limited and reliability and convenience are required, Pulsafeeder's PulsaPro 7440 has the compact size and features to make operation and maintenance easier and faster. The large, easy-to-view hydraulic diagnostic window provides observation of oil condition and proper pump operation saving time troubleshooting. Externally adjustable bypass valves protect the pump from system over-pressurization and quickly adapt to changing process conditions. The push-to-purge button allows for on-demand removal of air from pump hydraulics to avoid wasting energy from inefficient pump operation. When precise and accurate chemical delivery matters the PulsaPro 7440 provides dosing accuracy of plus/minus 0.5% across its operating range, whether the stroke length is set at full capacity or 10% of maximum. It is available with flows up to 1,098 gph and pressures up to 3,200 psig. **800-333-6677; www.pulsafeeder.com**



PulsaPro 7440 pump from Pulsafeeder

SMITH & LOVELESS EVERLAST PUMP STATION



EVERLAST Pump Stations from Smith & Loveless

Smith & Loveless EVERLAST Pump Stations offer a high ease of operation and maintenance, high level of operator safety, long-lasting service life, pump technology that eliminates clogging from flushables and low life cycle costs. All pumping, mechanical and electrical components above

the wet well with immediate access at ground level. This means that the STAR ONE Non-Clog Pumps reside at ground level out of the sewage and always dry. Likewise, all the valves, piping and controls reside also above the wet well, meaning that inspection of the entire pump station can be accomplished in seconds by simply opening the hooded enclosure. **800-898-9122; www.smithandloveless.com**

TRILLIUM FLOW TECHNOLOGIES FLOWAY VTP GENERAL VERTICAL TURBINE PUMP

The Floway VTP General Vertical Turbine Pump from Trillium Flow Technologies is a vertical close coupled, single or multistage turbine pump with a cast or fabricated discharge head, top-mounted motor and closed suction or wet pit design. This pump is available in a variety of material combinations for multiple water applications. It offers NSF/ANSI 61 and 372 certification for potable water with top hydraulic performance, low vibration levels, a long service life and reliable aftermarket and service solutions. It is capable of pressures up to 1,500 psi, with a capacity of up to 35,000 gpm. It can be operated in temperatures of -40 to 175 degrees F. **832-200-6220; www.trilliumflow.com**



Floway VTP General Vertical Turbine Pump from Trillium Flow Technologies

VAUGHAN CHOPPER PUMP

Self-priming Chopper Pumps from Vaughan are designed to be easily accessed outside of the wet well while pumping waste solids at heavy consistencies, without plugging or dewatering of the solids. They eliminate the loss in production and mess, along with making it easy to service the pump to get it back in operation. **888-249-2467; www.chopperpumps.com**



Chopper Pumps from Vaughan

Kamstrup Water Metering opens new headquarters in Georgia

Kamstrup Water Metering opened its new North American headquarters and manufacturing facility in Forsyth County, Georgia. Based in Denmark with employees in over 20 countries, Kamstrup supplies intelligent metering solutions and services, working to reduce waste and optimize the production and distribution of clean water and energy. Kamstrup began operating in the United States in 2013. With the new Georgia facility, Kamstrup has grown its North American operations and manufacturing capacity, expanding into a 150,000-square-foot space at Forsyth Commerce Center in Cumming.

Xylem, UNICEF partner to deliver water solutions in Africa

The Horn of Africa is experiencing extreme weather conditions worsened by climate change, including heavy flooding and a devastating drought that impacted nearly 37 million people. To meet urgent water and sanitation needs, UNICEF and Xylem are partnering to deliver solutions to severely affected communities in Ethiopia, Somalia, Sudan and Uganda. Through Xylem Watermark, the company's corporate social responsibility program, Xylem colleagues will share technical expertise with UNICEF's specialists in the region, collaborating to identify new solutions and innovations focused on climate-resilient approaches and technologies. Such approaches include solarization of borehole pumping, nonrevenue water prevention and aquifer recharge. Local utility staff will receive hands-on training and upskilling, and UNICEF will support utilities in the areas of finance and governance.

Thompson Pump honored with two top Florida business awards

Thompson Pump and Manufacturing was recognized with two top Florida business awards: the University of Florida's 2024 Gator100 Honoree and GrowFL Florida Companies to Watch 2023 honoree. Thompson Pump received the University of Florida award during the Gator100 10th anniversary celebration April 19-20. The GrowFL program honors impressive second-stage companies throughout Florida for developing valuable products and services, creating quality jobs, enriching communities and broadening new industries.

HUBER Technology opens new manufacturing facility

HUBER Technology opened its newest manufacturing facility in Denver, North Carolina. The plant will support environmentally sustainable practices and focus on partnerships with local suppliers, aiming to stimulate economic growth and foster prosperity within the region.

QED increases capacity at Michigan facility

QED Environmental System has increased the production capacity at its manufacturing facility in Dexter, Michigan, as part of a global transition to centralize all production under one roof. The company's portfolio of pumps, skimmers, wellheads, groundwater and soil sampling, treatment, and gas analyzer/detection products will now be designed and manufactured at the headquarters in Dexter. The transition will also see the facility become QED's global calibration and service hub.

De Nora selected to provide water treatment in Mississippi

De Nora Water Technologies has been selected to provide water treatment through its ClorTec electrochlorination technology at the O.B. Curtis Municipal Water Treatment Plant in Jackson, Mississippi. The federal initiative led by JXN Water to restore and reestablish water treatment operations,

Have sludge? We'll travel.

Take the Volute or Volute Duo pilot unit for a spin.

which includes infrastructure upgrades, has received federal and state funding, prioritizing its commitment to the ongoing water recovery effort. De Nora will provide two ClorTec 2400-C systems, each rack consisting of four 600 pounds per day electrolytic cells.

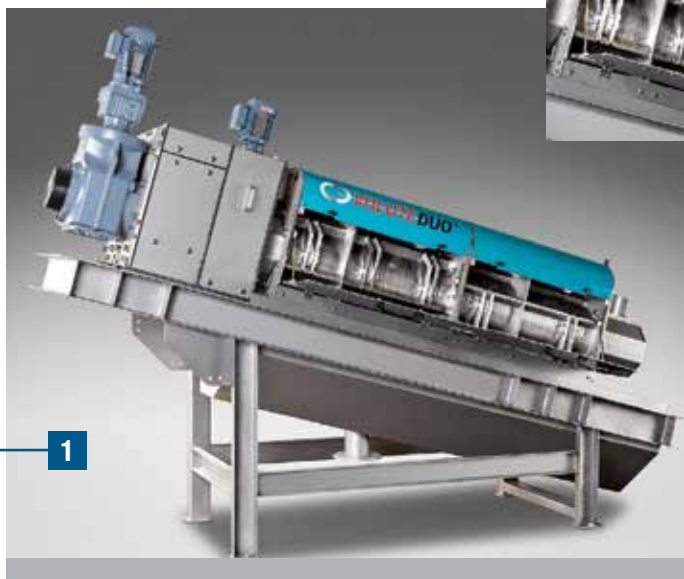
Franklin Electric announces 2023 recipients for outstanding achievement

Franklin Electric recognized several employees for their outstanding achievements towards business goals and customer satisfaction in 2023. The company presented the awards at their annual Commercial Summit, a multi-day event dedicated to strategic planning and continuing education. The winners of this year's awards for outstanding performance, sales and support were: U.S./Canada Salesperson of the Year: Dan Hilgendorf; U.S./Canada Field Service Engineer of the Year: Eric Aleksich; and U.S./Canada Team of the Year: Industrial Distribution. [tpo](#)

“Treating and distributing drinking water is a significant **responsibility that takes dedication, training and skill. Our operators welcome the challenges ... and I know they'll continue to excel.”**

Melissa Kahoun, Aqua Illinois, Area Manager, Kankakee and Will Counties Joseph Donovan Regional Water Treatment Plant, Kankakee, Ill.

Read what **matters** to operators in every issue of **TPO**.
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1



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- 1) The Volute Duo replaces a single conveying screw with two interwoven scrolls in barrel with a figure-eight configuration.
- 2) The design includes a dewatering drum that surrounds the screw with a casing made of a series of fixed and moving rings.
- 3) The system includes a tank (right) where feed material is mixed with polymer to start flocculation before it flows by gravity to the volute section for dewatering.

When Dewatering Is Difficult

A PRESS WITH TWO COUNTER-ROTATING SCREWS IS DESIGNED TO HANDLE CHALLENGING MATERIALS LIKE HIGH-FIBER SLUDGE AND WATER PLANT LIME SLUDGE IN A CONTINUOUS PROCESS

By Ted J. Rulseh

Efficient dewatering of sludges and biosolids matters a great deal. Materials at the optimum dryness can significantly reduce hauling costs for recycling or landfilling and can enable peak performance in a further drying processes.

But not all sludges are created equal. Some contain high concentrations of fibrous, inorganic or adhesive material that when dewatered yield a hard and compacted product.

To solve that problem, Process Water Technologies (PWTech) last year introduced the Volute Duo dewatering press to the North American market. Based on the company's Volute screw press technology, it is designed to prevent solids binding and to maximize solids dryness.

The Volute machine has a dewatering drum that surrounds the screw with a casing made of a series of fixed and moving rings that keep the fine gaps where water is released from blinding with solids.

To deal with difficult sludges, the Volute Duo uses twin counter-rotating screws in a single drum to break up and move material for dewatering. In a design similar to the original Volute, a series of fixed and moving plates create a nonblinding screen.

The rings are pulled up by a cam shaft system to create an opening between the moving ring and fixed ring to allow filtrate to escape. Chris Hubbard, business development and regional sales manager with PWTech, talked about the Volute Duo press in an interview with *Treatment Plant Operator*.

tpo: What was the motivation for introducing this technology to North America?

Hubbard: Treatment plants need a better way to handle sludges that dewater to a hard material, including many industrial sludges and lime, alum,

“Many of these sludges are dewatered in batch processes that are very labor and maintenance intensive. The Volute Duo dewater those materials in a continuous process.”

CHRIS HUBBARD

or ferric sludge from water treatment plants. Screw presses can dewater this material, but the cake would become too firm or dry and bind around the screw or plug the press and overload it. The Volute Duo enables a screw press to dewater cake to its full potential without clogging the machine.

tpo: What advantages does this press have over other methods for dewatering difficult materials?

Hubbard: Many of these sludges are dewatered in batch processes that are very labor and maintenance intensive. They fill a machine, press the material, shovel or scrape it out, put it in a barrel, and send it on its way. The Volute Duo dewater those materials in a continuous process that does not require operator labor or supervision.

tpo: Why are materials like wastewater treatment primary sludge and water treatment lime sludge difficult to handle?

Hubbard: They can be very fibrous, and they can very easily give up the water — in a screw press they can be dewatered to 30% to 60% and even 70% cake solids. The problem is that when the cake gets that dry, a standard screw press and even our Volute press has difficulty pushing the hardened cake out the end of the press.

tpo: How does the Volute Duo press deal with these challenging sludges?

Hubbard: Instead of a single conveying screw running through the center of the cylinder, it has two interwoven scrolls in barrel with a configuration similar to a figure eight. The two scrolls create a cutting action to break up solids that would bind up a single screw.

tpo: What percent solids can this press typically achieve?

Hubbard: That depends on the material, but for sludges we would target with the Volute Duo, I would say a low end of 25% and a high end of mid-60s. For pure primary sludge, cake solids typically would be in the mid-40s; for lime sludge the mid- to high 40s.

tpo: What is the volume capacity of the machine?

Hubbard: Depending on the sludge consistency, it can dewater up to about 2 tons of dry solids per hour.

“Machines have been in operation for several years throughout Asia and Europe, where there are quite a number of installations operating with manure and with sludge from wineries, breweries and other industrial facilities.”

CHRIS HUBBARD

tpo: Is there a way to increase the capacity?

Hubbard: The original Volute press can accommodate two or more drums in a single frame. That enables an extremely high-capacity dewatering systems in a small footprint. Another advantage is that it provides built-in redundancy so that if a customer were to lose one rotating assembly because of a motor failure or some other event, the other assemblies would keep on running. Units can be built with space to add more dewatering drums in the future.

tpo: What is involved in day-to-day operation of the press?

Hubbard: Operation is very simple. The sludge and polymer are fed into an atmospheric tank that can be covered or not. It is very easy to open the cover for inspection to verify that a good sludge and polymer mixture with good flocculation is forming. The machine then handles the process automatically. It monitors the torque and watches the flow rate. Depending on the level of instrumentation the customer desires, it can also automatically monitor the feed solids and cake solids levels. Power consumption is extremely low at up to 95% less than for other dewatering technologies.

tpo: What maintenance does the press require?

Hubbard: It needs very little maintenance. There are no internal wipers, brushes or seals and no high-pressure water. We recommend a daily visual inspection as the press is being started up for the day. Depending on the complexity of the system, monthly or quarterly calibration and alarm testing may be advisable. And there is a cassette of rings that may need to be replaced somewhere between 20,000 to 25,000 hours of operation. The design actually eliminates a wear area when handling very dry material. It's at the interface between the moving rings and the scroll near the discharge end where the cake is the driest. Very abrasive sludges can be aggressive on the scroll. That issue has been eliminated.

tpo: How well does this device fit the spaces inside treatment facilities?

Hubbard: It has a very compact footprint. The original Volute press has roughly half to two-thirds the footprint of other screw presses. The Volute Duo, for the same throughput, has on the order of three-quarters the size footprint of a Volute press, and so it is worth considering in applications where users need high capacity in a tight space.

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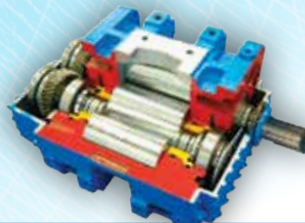
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sales@eurusbLOWER.com

tpo: What was done to prove out this technology?

Hubbard: The technology is owned by Amcon Japan, and PWTech is the exclusive distributor in the United States and Canada. Machines have been in operation for several years throughout Asia and Europe, where there are quite a number of installations operating with manure and with sludge from wineries, breweries and other industrial facilities.

tpo: How can prospective users explore how the technology might suit their operations?

Hubbard: We have a trailer-mounted pilot unit with capacity from 5 to 25 gpm. We can set up the trailer outside a building, or easily unbolt the skid for indoor applications. **tpo**



OZ Lifting davit crane wheel base

OZ Lifting Products' wheel base revolutionizes lifting operations by effortlessly transporting and positioning a davit crane (up to 1,200 pounds) across diverse environments. Featuring industrial-strength steel construction and powder coat finish, the versatile base tackles tough jobs with ease. Durable polyurethane-tread indoor/outdoor wheels with rear swivel casters ensure smooth mobility. Rear casters feature lock brakes for enhanced safety and stability, and a patent-pending floor-anchoring system allows the davit to rotate under load with 360-degree rotation. Made in the USA and fully adjustable from 56.57 to 77.57 inches long, 32.44 inches wide and 36.87 inches high, OZ's wheel base helps unlock the full potential of your davit crane.

800-749-1064;

www.ozliftingproducts.com



CAS Dataloggers TL400-I level transmitter

CAS Dataloggers' new TL400-I level transmitter from Novus Automation is designed for nonintrusive level and volume measurement in tanks. It utilizes low-power infrared laser time-of-flight measurements to determine the exact distance between the sensor and the surface of the contents of the vessel. It can be used to measure liquids such as water or solids like grains. An onboard processor provides advanced filtering capabilities to accurately measure stirred liquids and the ability to calibrate the output in volume with a 20-point linearization to accommodate irregularly

product spotlight water

Software assists in water system valve planning

By Craig Mandli

To make informed decisions with a water system, automated analytical instrumentation is the future. The **Cla-Tools software suite** from **Cla-Val** eliminates guesswork, allowing any user to analyze their current or future planned water systems. The program allows the user to analyze everything from VFD pump flow and controllability to PRV station or check valve design, providing unique insights into numerous aspects of a water system.

"We designed Cla-Tools to give engineers, operations personnel and managers the ability to design their systems ensuring they are obtaining optimum performance," says John Link, executive vice president of Cla-Val. "We are providing all our customers with the ability to be self-sufficient if they choose, always having the comfort of knowing they can get expert assistance if required, and have made this process very easy to access online for no cost."

The constantly evolving software platform lets users analyze everything from control, and modeling of stations to sizing and selection of the right valve, and there are built-in performance tools to ensure valve stations can handle the conditions they are subjected to over time. For example, Cla-CAV helps analyze pilot-operated control valves for the potential of cavitation and cavitation damage at the full range of flows and pressures enabling design engineers to determine if and when to add a cavitation trim. Cla-Station is a pressure-reducing valve



Cla-Tools software suite from Cla-Val

station and hydraulic modeling tool showing performance based on flow and pressure parameter inputs.

According to Link, the software uses color-coded graphs, tables and charts for easy analysis. Built-in calculators allow users to input their data and run different scenarios to determine if and what they need to adjust. For example, Cla-Power has a power consumption calculator that allows for all electrical products at a site, or in a vault, to be added with their daily usage and supply voltage, providing the total power and amp-hours of that system.

"With 13 different modules, there are many ways users can optimize existing valve stations and ensure thorough analysis of plans before installation," says Link. "We are also committed to growing Cla-Tools, by adding more features that our customers want to see, enabling them to have what they want, when they need it, with the ease of accessing online."

800-942-6326; www.cla-val.com

shaped vessels. The TL400 can be easily configured using its Bluetooth interface and the Novus SigNow software for Windows PCs, iOS, and Android devices.

800-956-4437;

www.dataloggerinc.com



Smith & Loveless PISTA VIO grit removal chamber

The PISTA VIO grit removal chamber from Smith & Loveless features a versatile chamber design that brings grit removal performance to tight spaces with unique layout

requirements. The innovative design of the PISTA VIO, which stands for variable inlet outlet, provides the ability to arrange the inlet and outlet channels at any angle up to the full 360 degrees of the chamber. The chamber achieves 95% grit removal efficiency of particles down to 100 microns in size across all flow conditions. Its flow maximizer baffle and tunnel system create an effective vortex flow pattern while the effluent flume counteracts the weir effect, significantly reducing grit bypass. With a 5:1 turndown capability, the PISTA VIO delivers performance and reliability during low-flow, average daily and peak flow conditions without derating.

800-898-9122;

www.smithandloveless.com



INDCO portable Quic Mixers for 5-gallon pails

INDCO Quic Mixers provide a portable, lightweight solution for mixing materials in 5-gallon pails. A ring mount provides a low center of gravity for steady, worry-free mixing in open-topped or closed 5-gallon pails with lids to 12 1/4 inches outside diameter. Stainless steel folding impellers fit through a 1 1/2-inch opening. Air or electric motors are

available, and all models are supplied with quick-change coupler and shaft design featuring a shaft pin that locks in place during rotation. Air-operated versions are available with a 3/4 or 1 1/2 hp air motor equipped with control valve to regulate speed from 300 to 3,000 rpm, and a muffler. Powered by a 1/2 hp totally enclosed fan-cooled motor that is ready to plug in to a standard outlet, the single-phase electric motor option operates at a fixed speed of 1,750 rpm (EP version supplied with motor leads only). INDCO Quic Mixers are ideal for mixing colorants into paint, remixing settled materials, blending powders into liquids and other general purpose mixing applications in 5-gallon pails. 800-851-1049; www.indco.com



Bristol Instruments Dinel DLS-35 Series level sensors

The Dinel DLS-35 Series of capacitive level sensors from Bristol Instruments are designed for use with liquids and bulk solids. Limits are set easily with a magnetic pen. A quick-set mode lets users perform set up without the presence of a medium. DLS-35 level sensors can be directly mounted to tanks, vessels, sumps, tubes, silos and hoppers. Bar, rod and rope electrode options collectively cover electrode lengths from 2 inches to 19.7 feet over five range options. Two LED indicators show operation status and provide visual confirmation of settings. Signal output options are NPN, PNP or NAMUR (change in supply current). Housing and electrodes are available in either 304 or 316L stainless steel. G3/4, G1, M27 and M30 threaded and C134 and C150 tri-clamp process connections are available. 877-866-8500; www.bristol-inst.com

Metrohm update to Raman Library

Metrohm introduced the first significant update to the Metrohm Comprehensive Raman Library. With over 20,000 compounds, the MCRL is the largest library available

on any handheld Raman instrument. The MCRL simplifies material identification for customers in diverse industries and broadens applications for handheld and laboratory Raman. The MCRL is available on Metrohm MIRA XTR/MIRA DS, B&W Tek TacticID and i-Raman instruments. With this update, sublibraries are now available on all handheld instruments and the i-Raman laboratory instruments, allowing users to narrow their search for faster and more accurate identification. Six sublibraries are available for individual purchase or included in the complete MCRL product. 866-638-7646; www.metrohmusa.com



Nidec vertical pump motors for severe duty environments

Nidec Motor Corp. expanded its line of Totally Enclosed Fan Cooled vertical motors with a new medium-high thrust motor and enhancements to its medium thrust inline motor. These two U.S. MOTORS products are available in frame sizes 182 through 286 and are specifically engineered for use in severe duty environments. The motors feature improved conduit box sealing, cast iron frame, brackets and fan cover guard, and through-the-bearing lubrication for better expelling of used grease, which extends motor life and is particularly critical for vertical motors. The motors also include an option to meet API 610 driver requirements. 888-637-7333; www.nidec.com



Vogelsang RedUnit XRL260 large-format grinding system

Vogelsang is bringing its largest format grinding system, the RedUnit XRL260, to North America. Vogelsang's largest hopper-fed grinder to date is designed specifically to reduce large quantities of solid waste mate-

product spotlight wastewater



Blower helps aeration systems operate at peak efficiency

By Craig Mandli

Submerged aeration systems require a pressurized air source to compress air for release below the water surface. The **INVENT iTURBO-Blower** was designed specifically for this application.

According to Dr. Marcus Höfken, president, CEO and founder of INVENT, the blower can be customized to the unique requirements of any wastewater treatment plant. This ensures the energy consumption and operating range is optimized for the specific process. The result is a dedicated machine operating at peak performance.

"We continuously evolve to reduce energy consumption and operating costs for utilities," says Höfken. "Typical aeration system blowers can account for up to 70% of a wastewater treatment plant's energy consumption."

The iTURBO-Blower is a radial compressor in either single or two stage configurations. The compressor is direct-driven by a high-speed permanent magnet motor. It incorporates "rigid" cartridge style air cushion bearings, not foils. The result is a dependable bearing without the complexity of active electronic control. The turbo impellers are optimized for the pressure and flow range required by any aeration system. They are modeled with computational fluid dynamic analysis in addition to test tuning to achieve peak efficiency.

Motor cooling is accomplished with a "two-pass" pressurized system for maximum heat transfer. As the system is independent of the process air, the blower can be used in extreme environments where ambient temperatures exceed 122 degrees F.

The integrated blower package uses Siemens or Rockwell Industrial PLC controllers and HMI panels. All measurement sensors required for the safe and reliable operation of the blower are included to constantly monitor air flow, pressure and temperatures. A communications connection to the blower allows all operating and diagnostic information such as power consumption, speed, and operating hours to be transferred to the plant SCADA or DCS systems. The acoustic enclosure is robust and durable, utilizing heavy section powder-coated zinc anneal sheeting. Fasteners, fixings, and hinges on the blower enclosure are 316 stainless steel. They are available in a range from 22 to 400kW, with discharge pressure capability to 150 kPa.

"When we looked into the question of how to improve the overall aeration system efficiency, we found that even the most modern turbo blowers still had a significant potential for optimization," says Höfken. "We didn't invent the principle, but we designed and developed a much better turbo machine." www.invent-uv.de



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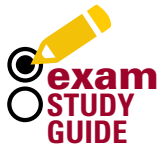
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rial quickly. The RedUnit XRL260 features two 50 hp geared motors capable of handling up to 130 cubic yards of solid waste per hour. The 5-by-2-foot inlet handles whole hogs and higher volumes of waste material. Units are available in different sizes with various blade options, offering continuous height adjustment.
800-984-9400;
www.vogelsangusa.com



Asahi/America larger Series 19 actuator sizes for butterfly valves

Asahi/America has expanded its Series 19 SAV electric actuation line to include a larger sized actuator, known as the S400, capable of operating on Asahi/America's family of 8- and 10-inch Type-57 butterfly valves. The Series 19 S400 is a part

of the SAV Smart Pack electric actuator product line and is available as an on/off, fail-safe, modulating or modulating fail-safe unit. The Series 19 S400 actuators have an output torque range up to 3,540 in-lbs. They feature all of the same standard features as the Series 19 product line including a heater, one set of dry contacts for PLC confirmation and one for alarm reporting, an OLED screen with push buttons, local controls and a QR code for easy and instant access to user manuals.
800-343-3618;
www.asahi-america.com



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people/awards

Lynn Terrien of the University of Wisconsin-Green Bay Lower Fox River Monitoring Program received the 2024 NEW Watershed Champion Award from the Green Bay Metropolitan Sewerage District.

Jeff Reininger, superintendent of the South Beloit Wastewater Department, was named Wastewater System Operations Specialist of the Year by the Illinois Rural Water Association.

Glen Bies, public works employee in Stevensville, received a Lifetime Achievement Award from Montana Rural Water Systems. He was a licensed water and wastewater treatment operator for 34 years.

Rep. Tracy O. King received a Rural Water Champion Award from the Texas Rural Water Association for his lifetime of service in the Texas House of Representatives.

Governor Brad Little received a Friend of Rural Water award from the Idaho Rural Water Association.

Kouao-Eric Ekoue, superintendent at the New Brunswick Water Utility, received a Meritorious Operator Award from the AWWA New Jersey Chapter.

Columbus (Wisconsin) Utilities won the award for America's Best Tasting Water from the National Rural Water Association.

The **City of Yakima** won the Central Washington Best Tasting Water contest for the second year in a row from the state AWWA chapter.

Ken Kirk, a former CEO and executive director of the National Association of Clean Water Agencies and a longtime water advocate and leader, passed away on March 18.

Martin Adams, general manager of the Los Angeles Department of Water and Power, was honored for 40 years of service by the city's Board of Water and Power Commissioners.

Pete Rogalsky, public works director in Richland, Washington, retired after more than 30 years of service.

James "Jim" D. Behmer, P.E., utilities director in Salisbury-Rowan, North Carolina, retired after more than 30 years in the water industry. He worked for the city of Salisbury for 23 years, 16 as utilities director.

Melanie Mow Schumacher, special projects/communications manager and assistant general manager of the Soquel Creek (California) Water District, was promoted to general manager, replacing **Ron Duncan**, who will retire in September.


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events

July 14-17

Georgia AWWA Section Annual Conference, Savannah Convention Center. Visit www.gawwa.org.

July 14-19

Louisiana Rural Water Association Annual Conference, Lake Charles Event Center. Visit www.lrwa.org.

July 15-Aug. 16

AWWA Water Treatment Operator Level 1 course, online. Visit www.awwa.org.

July 17-19

2024 Heartland Operators Conference, Holiday Inn Kearney, Nebraska. Visit www.nebwea.org.

July 24

AWWA Digital Twins for Emergency Management webinar. Visit www.awwa.org.

July 24-26

Minnesota Wastewater Operators Association Annual Conference, Timberlake Lodge, Grand Rapids. Visit www.mwoa.net.

July 24-27

Arkansas Water & Wastewater Managers Association Annual Summer Conference, DoubleTree hotel, Hot Springs. Visit www.arkwwma.org.

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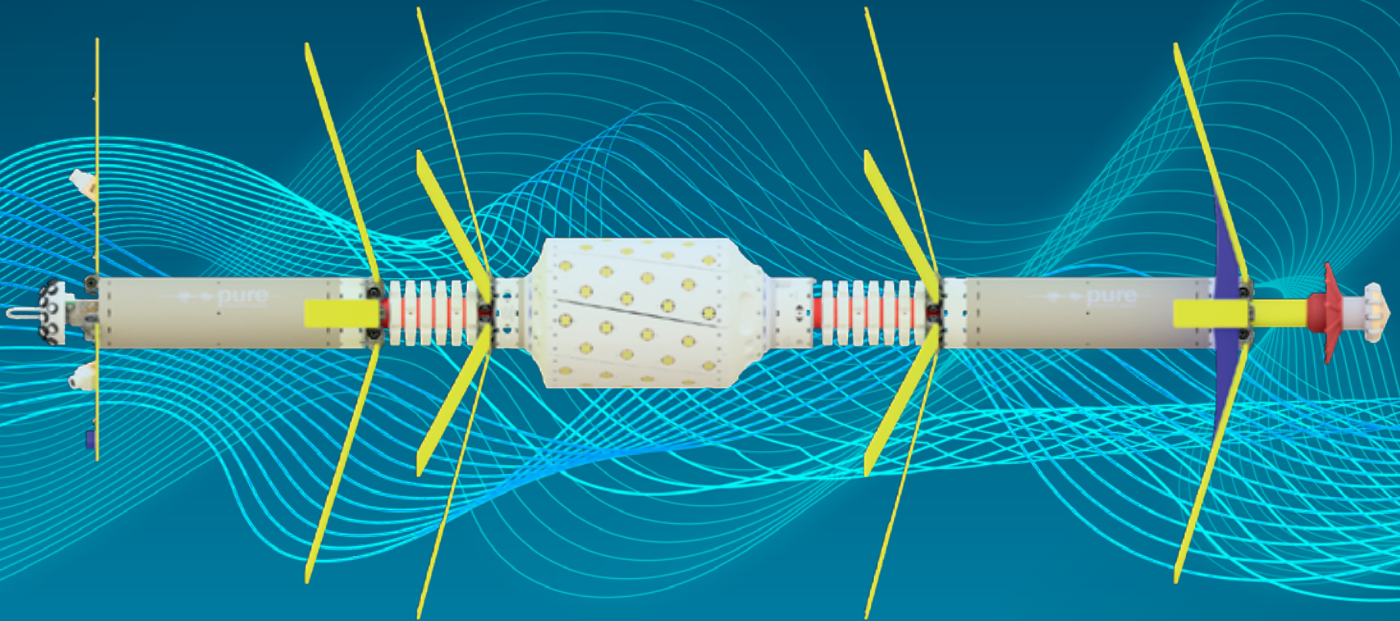
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